

7. On the *Theraphosida* of the Lower Amazons: being an Account of the new Genera and Species of this Group of Spiders discovered during the Expedition of the Steamship 'Faraday' up the River Amazons. By FREDK. O. PICKARD CAMBRIDGE, B.A.<sup>1</sup>

[Received June 16, 1896.]

(Plates XXXIII.—XXXV.)

The Spiders described in the present paper form a first small instalment of the collection made by Mr. Austen and myself during our expedition up the Lower Amazons in the s.s. 'Faraday,' under the charge of Mr. Alexander Siemens. The idea of publishing the zoological results of the expedition in book-form by the Museum of Natural History has, I believe, been definitely abandoned. This being the case, I have availed myself of the generosity of this Society, and shall endeavour to publish my account of the Araneidea in small sections, as opportunity offers.

The identification of members of this order is by no means the easy matter one would suppose; for not only does the material itself offer great difficulties, but almost every point of classification has to be reinvestigated *ab initio*.

Of the total number of species represented in the collection I am, of course, unable to speak with certainty at present, but I should probably be within the mark if I were to estimate it at about 200. How many of these may be new it is impossible to say, though they will scarcely perhaps bear the proportion of eleven new species to fourteen described, as has been the case in the present paper in the family *Theraphosida*.

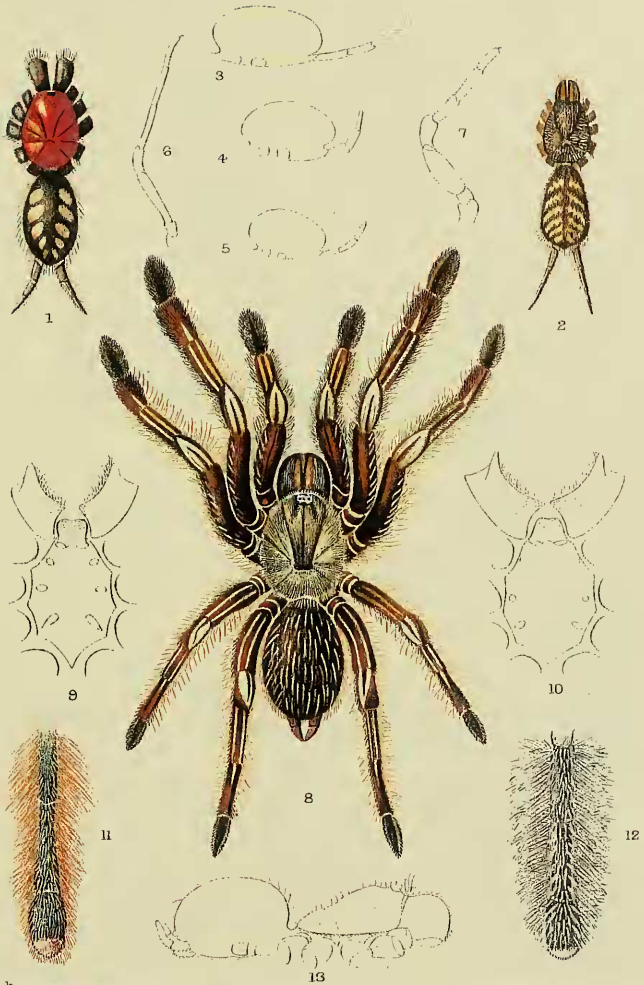
The district of the Amazon Valley may be broadly divided into three fairly well-marked regions. First, the alluvial region of the river itself, including the countless islands and vast tracks of luxuriant river-margin.

Second, the higher and drier Campos districts, sandy regions clothed with grass and spangled with flowers soon after the commencement of the rainy season, about the month of March or April.

Third, that vast region significantly termed by the natives "*Terra Firme*," clothed for hundreds and hundreds of square miles by the impenetrable forest.

And to these three regions I must add what I may term the "*Lago* district,"—the Lake district so-called—where acres of rushes, sedge-grass, and water-weeds furnish a habitat frequented by a fauna evidently peculiar. Here almost every form seems to be adapted for a semi-amphibious existence. Large Spiders

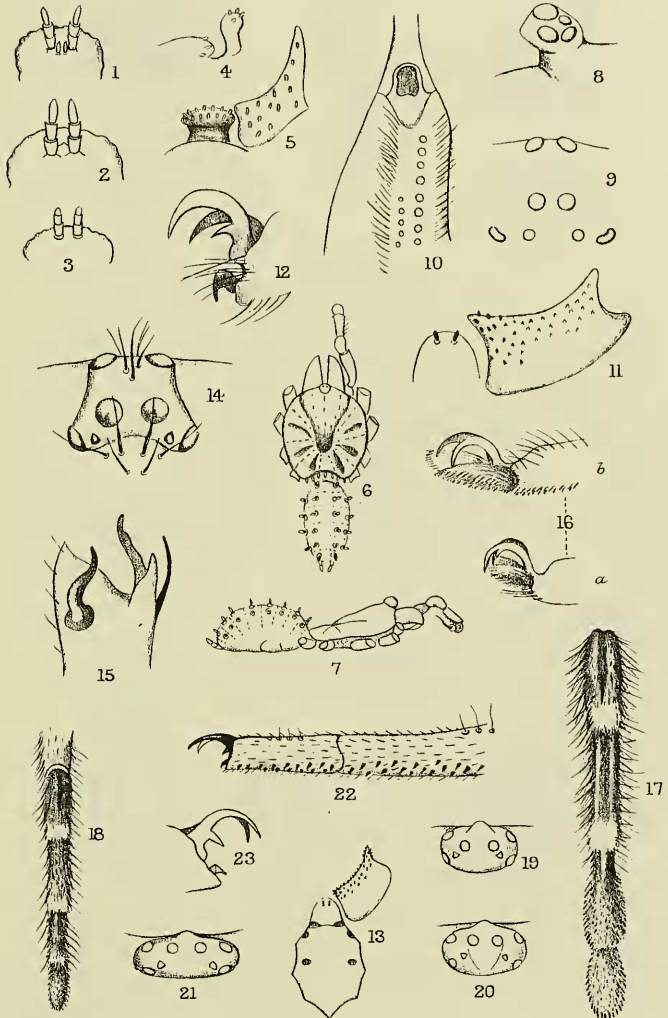
<sup>1</sup> Communicated by the Secretary.



Fred<sup>k</sup> O. Pickard Cambridge del.

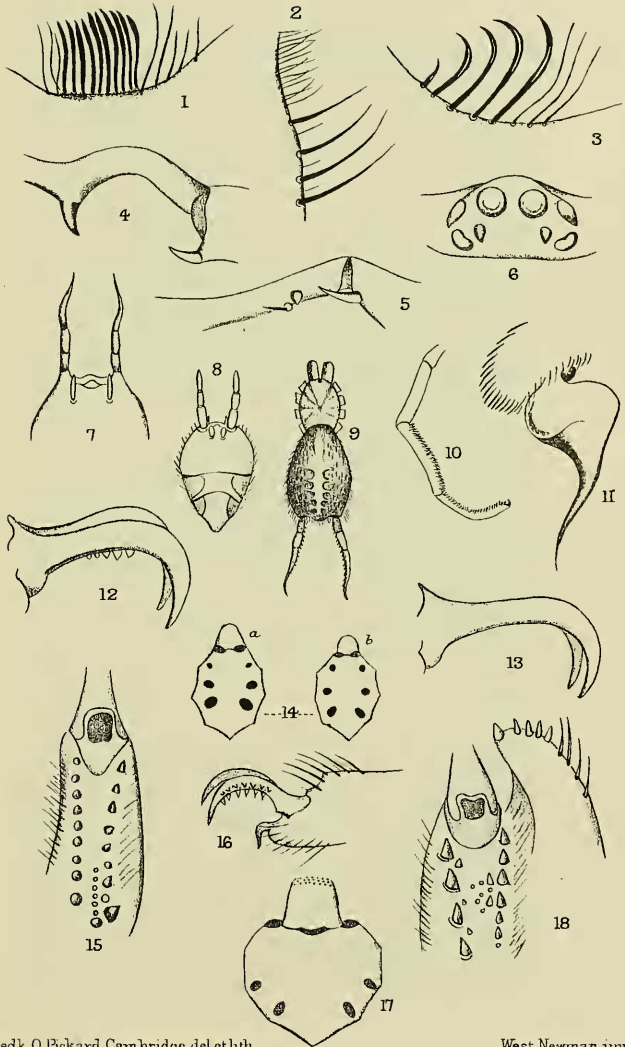
West, Newman chromo.

New Theraphosidæ from the Lower Amazons.



Fredk O. Pickard Cambridge del et lith.

West, Newman unip



Fredk. O. Pickard Cambridge del. et lith.

West, Newman imp.

New Theraphosidæ from the Lower Amazons.

of the group *Triclarinae* vie with the essentially semi-aquatic *Dolomedes* in displaying their skill in running upon and diving beneath the surface, out of sight and out of reach of enemies in pursuit.

Throughout the three first-mentioned regions there are, of course, certain Spider forms found sprinkled equally over each—as, for instance, the ubiquitous *Avicularia*, the "*Aranha caran-juejira*," the crab-spider *par excellence* of the native Brazilian. But there are also many special forms, each of them peculiar to their special district.

Here one finds, too, 4000 miles on the other side of the globe, beneath an equatorial sun, forms strangely familiar to the English naturalist in districts of similar physical character at home.

The sandy campos, for instance, furnish us with a *Lycosa*, in colour adapted to its environment, and curiously similar to the *Lycosa picta* of our English sand-dunes.

In the forest, Epeirids, Therididæ, and Salticids swarm, of every shape and hue. Thomisids, too, the majority very similar to European species in general character, to which the pure white waxen *Eripus*, lurking in some snow-white blossom, is a notable exception.

One must not, however, have the impression that the Spider-fauna of tropical America is much the same as that of England. We have nothing, for instance, to compare with the curious Gastracanthids, the crimson-spined *Micrathena schreibersi*, or the numerous species of the thorny-backed genus *Gastracantha*. We have nothing to match the huge *Nephila* with her diminutive husband, or the lovely *Argiope argentata* stretched on the white silken cross in the centre of its orbicular snare. Except an *Atypus* or two, we have nothing to take the place of the 250 species and upwards of the *Mygalomorphæ* which are found in Southern and Central America. So that, although many a familiar form will meet the eye of the English arachnologist on the Amazons, yet there are countless forms differing in size, in structure, and in colour from anything that he can find amongst the Spider-fauna of Northern Europe.

One must confess, too, that at the present time arachnologists still know *next to nothing* of the Spiders of Brazil. Nor do I speak only of differences specific, a more extended knowledge of which merely multiplies the known species ten or a hundredfold: nor only of a knowledge which enables us with certainty to pair this female with that male which, according to the laws of Nature, rightfully belongs to her—a matter of no little difficulty even to specialists. I refer rather to our knowledge of almost everything which has to do with their habits and domestic economy. We must confess, for instance, that we do not yet know the staple diet of so common and so well-known a Spider as the huge *Avicularia*. Though I was out night after night, and though I waded, on several occasions the whole night through, the tunnels of twenty and upwards of the sand-burrowing "*Mygale*,"

so common in the neighbourhood of Santarem, yet not *once* could I detect a Spider in the act of seizing her prey or even venturing beyond the entrance of her burrow.

I accentuate these deficiencies in our information, because one so often hears of a traveller neglecting to collect material, or make observations of habits, on the grounds that the "Authorities" at home nowadays know *everything* and that the trouble taken would be but labour lost.

Among the more interesting incidental discoveries made during the work of classification, I might mention that of the stridulating-organs found in three species of the subfamily *Diplurinae*. These—to which I have given the names *lyra* and *pecten* (the former referring to a row of chitinous keys on the inner side of the coxa of the pedipalp, the latter to a row of spines on the mandible)—are very similar to the musical boxes found in certain Oriental groups of *Mygalomorphæ* by Mr. Pocock. Of what may be their real use, and of what their ultimate significance in systems of classification, it is perhaps a little too soon to speak.

Before concluding these few remarks by way of preface to the more technical and less interesting descriptive matter, I would like to take the opportunity of giving my hearty thanks to the many kind friends from whom I received both encouragement and actual assistance during our expedition up the Amazons.

Had it not been for the courtesy of Mr. and Mrs. Alexander Siemens, I should probably not have visited Brazil at all. Nor must I forget to thank Mr. Brocklehurst, of Pará, through whose kind introduction I fell into the hands of Mr. Wallace, an American gentleman resident in Santarem. For my fortnight's excursion in the forest I am entirely indebted to Mr. Wallace, who courteously placed his country residence at my disposal and gave me every assistance in his power to render my sojourn a complete success.

To the many other friends whom I came across both afloat and ashore, too numerous to mention by name, I must give my thanks *en masse*.

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Amongst the many useful handbooks on zoology issued from time to time by Dr. E. Goeldi of the "Museu Paraense" at Pará, will be found two on the "Spider-fauna" of Brazil. The first,

published in 'Sonderabdruck aus Mittheilungen aus dem Osterlande,' neue Folge, V. Band, pp. 200-248, while Dr. Goeldi was still in the neighbourhood of Rio Janeiro, deals with the general question of the state of knowledge of the Spider-fauna of Brazil at the time he wrote. This pamphlet, entitled "Zur Orientierung in der Spinnenfauna Brasiliens," falls into four sections, the third of which is divided again into four subdivisions.

- I. "Der Stand der Kenntnis der brasilianischen Arachniden vor 1880."
- II. "Erweiterungen seit 1880."
- III. "Versuch einer Charakteristik der Spinnenfauna der mittleren Küstenprovinzen Brasiliens."
  - A. "Die Spinnenfauna der Stadt Rio de Janeiro, beziehungsweise ihrer nächsten Umgebung."
  - B. "Die Spinnenfauna des Urwaldgebietes der heissen Niederung."
  - C. "Die Spinnenfauna des Urwaldgebietes des Orgelgebirges (Provinz Rio de Janeiro)."
  - D. "Spinnen aus dem Sertão der Provinz São Paulo."
- IV. "Einige Beobachtungen über das Geschlechtsleben einzelner Epeiriden Brasiliens."

This short though comprehensive treatise forms a valuable introduction to the subject, and is written in the German language.

1894. GOELDI, Dr. E.—"Estudos Arachnologicos relativos ao Brazil," Boletim do Museu Paraense de Historia Natural e Ethnographia, Pará, 1894, pp. 32-39.

This short paper is the first of what Goeldi hopes will be a series of papers dealing with the whole known Spider-fauna of Brazil. It contains Section I. 'Revisão das Territelarias Brasileiras,' divided into seven subdivisions, each of which contains a brief summary of the species of *Theraphosidæ* described by the various authors who have written on them.

- A. "Territelarias de viagem Spix e Martins (1817-1820) elaboradas por M. Perty."  
(Six species and two new genera, *Idiops* and *Actinopus*.)
- B. "Territelarias na grande obra de Hahn e Koch sobre os Arachnidos (1831-1848)."  
(Twenty-four species, subgenus *Mygale*, and *Actinopus tarsalis*.)
- C. "Territelarias de viagem do Condo François de Castelnau elaboradas por Lucas (1843-1847)."  
(Six species, three new, subgenera *Mygale* and *Actinopus*.)
- D. "Territelarias brasileiras citadas no trabalho monographico de A. Ausserer, 1871-1875."  
(Thirty species and seven doubtful under sixteen genera.)
- E. "Territelarias de viagem do Prof. E. von Beneden, descriptas pelo Dr. Ph. Bertkau (1880)."  
(Eleven species, all new; one new genus, *Thalerothela*.)



F. "Territelarias brazileiras descritas na grande obra do Conde Eugen von Keyserling sobre as 'Aranhas da America (1892).'"

(Fourteen species, four new ones.)

G. "Territelarias brazileiras segundo a obra do Dr. Eugène Simon, 'Historia natural dos Arachnidos' (1892-1894)."

The total number of species belonging to South America is computed at 248.

These brief extracts from Dr. Goeldi's paper, which is written in Portuguese, will give some idea of its value to students in Brazil desirous of becoming acquainted with work already done amongst the *Theraphoside* of South America. I have to thank Dr. Goeldi for the opportunity he has given me of perusing these publications during my brief visit to the Pará Museum in January 1896.

#### Suborder MYGALOMORPHÆ, Pocock, Oct. 1892.

It is not altogether easy to decide which of the various subordinal names proposed for this group of Spiders is the most suitable and therefore to be retained. We have first of all the ancient division of the order by Walckenaer into two large suborders under the names "*Thérophoses*" and "*Araignées*" (Ins. Apt. tome i. 1837, p. 38). These are of the same value as the "*Mygalées*" and "*Aranées*" of Dugès ("Observation sur les Aranéides," Ann. Sci. Nat. sér. 2, tome vi. 1836, p. 162). Next we have the subordinal division made, under the names of "*Quadrípulmonaires*" and "*Bipulmonaires*," by Dufour ("Arach. Quadrípulmonaires," Ann. Gén. Sci. Phys. vol. iv. 1820), equivalent to the *Tetrapneumones* and *Dipneumones* of Latreille, these names being of course based upon the possession of one pair or two pairs of lung-books.

Later, in 1870, we find the whole order subdivided into seven suborders—the *Orbitelariæ*, *Retitelariæ*, *Tubitelariæ*, *Territelariæ*, *Citigradæ*, *Laterigradæ*, and *Saltigradæ*—by Dr. Thorell, corresponding, as he himself tells us, with the almost similarly named families of Latreille, of which the suborder *Territelariæ* corresponds to the *Thérophoses*, *Mygalées*, and *Tetrapneumones* of the earlier authors.

In his Hist. Nat. Araign. i., Oct. 1892, p. 61, M. Simon recognizes two suborders under the double names "*Aranææ Theraphosæ*" and "*Aranææ Veræ*"—the former including *Liphistiidæ* and the families *Aviculariidæ* and *Atypidæ*; the latter the *Hypochilidæ* (a tetrapneumonous form) and every other known family.

In October of the same year Mr. R. I. Pocock, in a paper on the Classification of Spiders (Ann. Mag. Nat. Hist. ser. 6, x. p. 306), has divided the order *Aranææ* into two main divisions—the *Mesothelæ*, including the family *Liphistiidæ*, and the *Opisthothelæ*, including every other known family. These two divisions are based upon the position of the spinning-appendages in the middle of the ventral area or at the distal end of the abdomen.

The division *Opisthothelæ* is subdivided into two suborders similar in their extent to those of M. Simon, for which Mr. Pocock has selected the names *Mygalomorphae* and *Arachnomorphae*.

So recently as March 1, 1895, Dr. Thorell ('Descript. Catalogue of the Spiders of Burma') has selected two new names for two similarly constituted suborders—*Parallelodontes* and *Antiodontes*, referring of course to the articulation of the mandibles. These two suborders are apparently equivalent to M. Simon's "*Araneæ Theraphosæ*" and "*Araneæ Vercæ*," and to Mr. Pocock's "*Mygalomorphae*" (excluding *Liphistius*) and "*Arachnomorphae*."

Which of these names are most suitable? One might suppose that those which referred to some important character would be the most convenient; but such is not necessarily the case, since, for instance, the division into *Tetrapneumones* and *Dipneumones* was entirely suitable until the discovery of "*Hypochilus*," with four lung-books, and the fact that "*Nops*" had no lung-books but four tracheal stigmata; so that, although Dr. Thorell's terms "*Parallelodontes*" and "*Antiodontes*" are suitable as referring to an important differential character of the two groups, yet these, too, are liable to be laid aside, when perhaps some form is discovered offering in itself characters proving it to belong to both suborders.

As a matter of fact, the names which have less direct reference to such characters are in reality after all more convenient, and indeed suitable, and certainly a single name is more convenient than a double one—"Mygalomorphae" than "*Araneæ Theraphosæ*," for instance.

For these reasons I have retained the terms "*Mygalomorphae*" and "*Arachnomorphae*" in the present paper; while I can see no reason for substituting the new family name *Aviculariidae* of M. Simon for the older and quite as suitable name *Theraphosidae* of Thorell, following Walckenaer.

#### Family THERAPHOSIDÆ, Thorell.

List of Genera, Species, and Subspecies from the Lower Amazons from January to March, 1896—including twelve genera, fourteen species, and one subspecies: of these, four genera are new, eleven are new species, one a new subspecies, and one the male sex of which is new to science.

##### Subfam. PARATROPIDINÆ.

Genus *Paratropis*, E. Sim. Species *P. papilligera*, n. sp., ♂ ♀, p. 723.  
 " " *Anisaspoides*, new. " *A. gigantea*, n. sp., ♀, p. 726.

##### ACTINOPODINÆ.

Genus *Actinopus*, Perty. Species *A. wallacei*, n. sp., ♀, p. 728.

##### CTENZINÆ.

Genus *Acanthodon*, Guérin. Species *A. santaremia*, n. sp., ♀, p. 733.

##### BARYCHELINÆ.

Genus *Homæoplacis*, E. Sim. Species *H. austeni*, n. sp., ♂, p. 735.

##### AVICULARINÆ.

Genus *Acanthoscurria*, Auss. Species *A. geniculata*, C. K., ♀, p. 737.  
 " " " " *A. brocklehursti*, n. sp., ♂,  
 [p. 739.]

- Genus *Avicularia*, Lamarck. Species *A. avicularia*, Linn., ♀, p. 741.  
 " " " " *A. a. variegata*, n. subsp., ♀,  
 [p. 743.  
 " *Santaremia*, new. " *S. pococki*, n. sp., ♀, p. 746.
- Subfam. DIPLURINÆ.  
 Genus *Harmonicon*, new. Species *H. rufescens*, n. sp., ♀, p. 756.  
 " *Melodeus*, new. " *M. sanguineus*, n. sp., ♀, p. 758.  
 " " " " *M. niger*, n. sp., ♀, p. 759.  
 " *Fufius*, E. Sim. " *F. auricomis*, E. Sim., ♂ (new),  
 [♀: p. 750.  
 " *Ischnothele*, Auct. " *I. siemensi*, n. sp., ♀, p. 762.
- Genus *Neodiplura*<sup>1</sup>, n. g. Species *N. jelskii*, n. sp., ♂ ♀, p. 755.  
 " *Santaremia*<sup>1</sup>, n. g. " *S. longipes*, n. sp., ♀, p. 749.

### Family THERAPHOSIDÆ.

#### Genus PARATROPIS, E. Simon.

Type. *P. scruposa*<sup>2</sup>, E. Sim. (♀), Ann. Soc. Ent. Fr. 1889, pp. 214, 215. *Hab.* Upper Amazons. 14 mm. long.

PARATROPIS PAPILLOERA, n. sp. (Plate XXXIV. figs. 1, 6, 7, 8, & 23, and Plate XXXV. fig. 17.)

♂ ♀. *Hab.* Santarem, Lower Amazons. ♂ 12.75 mm. long; ♀ 12.5 mm. long. Types in coll. Brit. Mus. Nat. Hist. London.

♂.—*Carapace* almost circular, purple-brown, entirely and minutely granulate. Cephalic ridge bearing three longitudinal lines of fine rufous hairs; ocular region more densely clothed with similar hairs; thoracic area clothed with converging lines and margin of carapace fringed with rufous hairs. Cephalic and thoracic impressions distinct. Central fovea deep, procurved. Base of carapace slightly emarginate, fringed with short bacilliform hairs. Cephalic area almost two-thirds the length of carapace.

*Abdomen* dull brown, bearing four longitudinal dorsal rows of eight to nine small tubercles, each emitting from its summit a rufous, plumose, bacilliform hair. Lateral area finely tuberculiform, furnished with scattered rufous hairs. Ventral surface pale rufous, rugulose. *Spinners* four: posterior pair pale, straw-yellow, dusky above, three-jointed, one-third total length of abdomen; basal joints equal, apical joint twice the length of basal; anterior pair equal in length to basal joint of posterior pair, almost contiguous, half a diameter apart.

*Ocular tumulus* tuberculiform, globular. Anterior row of eyes slightly procurved. Anterior centrals largest, one-third their diameter apart and from anterior laterals. Diameter of latter almost equal to that of former. Posterior centrals smallest, almost

<sup>1</sup> *Neodiplura jelskii* was taken in Peru by Dr. Jelski; while *Santaremia longipes* is a native of Trinidad.

<sup>2</sup> The specific name under which the type is described in *op. cit.* is "*scruposa*," not "*scrupca*" as accidentally quoted in Hist. Nat. Arazn. 1892, i. 1, p. 78.

in contact with posterior laterals and anterior centrals. Laterals of both rows almost in contact.

*Mandibles* purple-brown, clothed along ridge with rufous hairs; sides with single band of short hairs, more numerous below. Fang-groove fringed on outer margin with row of curving rufous hairs, those on inner margin similar but less dense. Floor of groove bearing two rows of conical teeth of irregular size and length. Inner row, commencing at base of fang, composed of 14, outer row, commencing between numbers 4 and 5 of inner row, composed of 10 rather stouter teeth.

*Sternum* broader than long, smooth, almost circular, pale fulvous, exhibiting before base of labium a low transverse ridge. Sigilla not distinct; 1st, 3rd, and 4th pairs visible. *Labium* quadrate, oblique, not distinctly impressed at base by sigilla; entire anterior margin studded transversely with numerous minute cusps. *Coxa of pedipalp* pale fulvous, its anterior apical angle elongate, pointed; inner margin fringed with rufous hairs, and inner surface studded with numerous minute cusps, clustered towards inner basal angle.

*Legs.* Coxæ fulvous; i. and ii. brown; iii. and iv., femur, patella, and tibia brown; protarsus and tarsus pale fulvous. Femur of i. and ii. bearing a few minute spines, those of iii. and iv. more numerous. Patella and tibia of 1st pair incrassate, the latter bearing beneath a few setiform hairs; of ii., iii., and iv. slender, bearing numerous setiform hairs beneath. Protarsus and tarsus of all four pairs furnished with numerous setiform hairs, spines on iii. and iv. Tarsus of all four pairs without a true scopula, but bearing beneath numerous, scattered, scopuliform hairs. Tarsi i. and ii. with three claws, superiors with a single tooth below the middle, inferior claw minute; tarsi iii. and iv. with two claws, superiors with a single submedian tooth, inferior claw obliterated.

*Pedipalp* dull brown. Patella geniculate; tibia broad, fringed on outer side with stiff setiform hairs; tarsus one-third the length of tibia, short, globular; bulb compressed, pyriform; stylum curved downwards and outwards, a little longer than tibia.

*Comparative measurements in millimetres.*—♂. Carap. 6·75 long., 6·75 lat. Abd. 6 long., 3·5 lat. Ceph. area 4·5 long. Stern. 3·75 long., 4·5 lat. Coxa of pedipalp 2·5 long., 1 lat. Pedes, long. i. 26—ii. 21—iii. 18—iv. 25. Artl. i. long. 3—1—6—2—5·75—5—2·5. Artl. iv. long. 2·5—2—6—2—5—5·5—3. Postr. mam. 2 long; artl. 5—5—1. Antr. mam. 75 long., 5 separ. Mandib. 2·5 long.

♀.—Carapace, abdomen, and legs almost entirely encrusted with minute grains of grey grit, concealing the purple-brown colour and the granular surface of the carapace, save here and there. The encrustation also obliterates or conceals the rufous hairs, and many of the bacilliform hairs as well. Underside comparatively free from encrustation, fulvous. Abdomen, sternum, eyes, labium, and coxa of pedipalp similar in character to those of the male. Anterior row of eyes, however, slightly recurved.

*Legs* shorter and stouter than in the male; tarsus i. furnished

with a double series of from 6-7 small cusps, on either side, beneath; tarsus ii. *without any spines*, but furnished with numerous spiniform hairs; tarsi iii. and iv. without spines, but armed with spiniform hairs. Protarsus i. furnished with numerous stout cusps beneath; protarsus ii. with a few apical and a few other spines on the underside; protarsi iii. and iv. furnished with numerous spines. Tibiæ i. and ii. armed beneath with numerous bacilliform spines. Tibiæ iii. and iv. armed with numerous spines beneath. Tarsi i. and ii. three-clawed, superiors with single submedian denticle; tarsi iii. and iv. two-clawed, superiors with single submedian denticle, inferior claws obliterated.

*Spinners* four: posterior pair less than one-third the length of abdomen; basal joints equal; apical joint double the length of basal; anterior pair very short, equal to basal joint, half a diameter apart.

*Fang-groove* furnished on both sides with a row of stiff rufous hairs, those on the outer margin coarser. Floor of groove studded with a double series of conical teeth, on the inner margin 14, on the outer margin 10, the latter being the longest. Tooth no. 9 on outer margin is inserted opposite tooth no. 14 on the inner margin.

*Comparative measurements in millimetres.*—♀. Carap. 5.5 long., 5.5 lat. Abd. 7 long., 5 lat. Ceph. area 4 long. Stern. 2.75 long., 3 lat. Coxa of pedipalp 2.5 long., 1 lat. Pedes, long. i. 18—ii. 14.5—iii. 14—iv. 20. Artl. i. 2.5—1—4.5—2—3.5—3—2. Artl. iv. 2.25—1—5—2—3.5—4—2. Postr. mam. 2 long.; artl. 5—5—1. Antr. mam. .5 long., .25 separ. Mandib. 2.5 long.

In both sexes there are present on each of the last three joints of all four pairs of legs, on median line of tarsi, at base of protarsi, and at base of tibiæ on both sides, several small round tubercles, from whose summit there issues a single, long, fine "*sensory hair*."

The male and female described above were taken together beneath a damp decayed log of wood in the low-lying part of the forest south of Santarem, on the Lower Amazons. The female was partially buried in the soil beneath the log, the whole body being apparently bedewed with fine drops of moisture. She remained perfectly motionless, and appeared as though dead and in process of decomposition through what appeared to be a minute fungus. The supposed fungus, however, proved to be only the papilliform hairs, each with several drops of moisture on its surface. There appeared to be no tube or nest of any kind, and one is led to suppose that the hairs are used for perceiving the passage of an insect over the spider as it lies buried in the mud. Whether this is so or not one cannot, of course, pronounce with certainty; but the encrustation of the spider with grains of grit, rendering it almost invisible when half buried in the earth, would seem to point to some such habit. The male, which was lying with its legs gathered together, close to the female, is, however, not so encrusted with grit, though the plumose papilliform hairs are very noticeable.

I am unable to satisfy myself that *P. scrupeosa*, E. Sim., ♀, *op. cit.*, is identical with the species now before me. The description shows that they are undoubtedly closely allied; but of *P. scrupeosa* M. Simon says: "*Tarso 2 paris intus, prope apicem, aculeo unico instructis.*" The tarsi of the second pair in *P. papilligera* have not this apical spine. He also says: "*Abdomen—aculeis bacilliformis fulvis elevatis paucis, in series transversas parum regulariter ordinatis, munitum,*" and makes no mention of the regular transverse rows of tubercles, each of which bears a bacilliform hair. I have therefore considered it more prudent, and less liable to cause subsequent confusion, to describe the present species as new. In any case the male is unknown to science, and would, on that account, merit a careful description.

*Note.*—Since writing the above another female, 13 mm. long, and a smaller one have come to hand from amongst my captures in the forest at Santarem. These specimens entirely bear out the distinctions made between *Puratropis* and *Anisaspis*, while at the same time proving how inconstant are the number and position of spines and cusps, and how unreliable, as a character, is even the dentition of the mandibles. The eyes are closer together; the spinners *four in number*; the legs longer in proportion. The anterior tarsi have only a single row of cusps on either side, but the cusps are more numerous than in the female above described. The fang-groove is furnished with 16 teeth on the inside and 2 supplementary ones towards the apex, and 14 on the outer margin. The number of teeth is thus greater by 2 in each row than in the type female. The female described above must still be held as the type, although the other is a finer specimen, for both male and female were found side by side under the same piece of wood.

One cannot be thoroughly satisfied concerning the differential characters of these Spiders until more material is available for careful comparison.

#### ANISASPOIDES, gen. nov.

##### *Generic Characters.*

*Mamillæ two. Terminal joint nearly double the length of basal. Inferior claw present on tarsi i. and ii., absent on tarsi iii. and iv. Fang-groove furnished with two rows of 7-14 teeth respectively.*

ANISASPOIDES GIGANTEA, n. sp. (Plate XXXIV. figs. 2 & 22.)

♀. *Hab.* Breves, Lower Amazons. 12.75 mm. long. Type in coll. Brit. Mus. Nat. Hist.

♀.—*Carapace* a little longer than broad, purple-brown, finely granulate, and so closely encrusted with fine grit as to almost entirely obliterate all traces of the fine rufous hairs, of which there are three converging lines on the cephalic ridge, converging lines on the thoracic area, and a marginal line round the carapace. Central fovea deep, transverse, procurved.

*Abdomen* encrusted with grit; bearing four rows of tubercles,

each emitting from its summit a single, long, fine bacilliform hair. When first captured these were perfect; they have since, however, become effaced, except at the base of the abdomen.

*Ocular tumulus* tuberculiform, globular. Anterior central eyes slightly smaller than anterior laterals; a little more than the radius apart, nearly one diameter from anterior laterals. Anterior row straight. Posterior centrals very small, one diameter from anterior centrals, almost in contact with posterior laterals; the latter ellipsoidal, one quarter of its axis from anterior laterals, which is greater than the diameter of either of the anterior central or anterior lateral eyes.

*Sternum* broader than long; sigilla encrusted and scarcely visible. *Labium* quadrate, apex transversely studded with numerous minute cusps. *Coxa of pedipalp* produced at anterior apical angle into a long spur-like prominence; its anterior surface studded with minute cusps, clustered more closely towards basal anterior angle; the joint is stouter, longer, and more thickly fringed with rufous hair than in *Paratropis papilligera*, ♀.

*Legs.* Tarsi and protarsi i. and ii. furnished beneath with two series of paired teeth, each pair obliquely situated; but their position is not absolutely regular. Tarsi and protarsi iii. and iv. with two series of long stout spines beneath.

*Tarsal claws.* Three on tarsi i. and ii., superiors with single denticle towards base; inferior claw present. Tarsi iii. and iv. with two superior claws, each with a single denticle towards base, inferior claw obliterated. Glandular tubercles on tibiae. Protarsi and tarsi similar in position to those of *P. papilligera*, ♀.

*Spinners, two only*; posterior pair less than one-half the length of abdomen; basal joints equal in length, apical joint one-fourth longer than basal joint. Anterior pair of spinners obsolete.

*Mandibles* similar to those of *P. papilligera* in character, but the two rows of teeth with which the fang-groove is furnished differ somewhat in number and arrangement. Outer row containing 7 stout teeth; inner row containing 14 teeth of smaller size. Tooth no. 7 in outer row stands opposite tooth no. 14 of the inner row, whereas in *P. papilligera* it stands opposite no. 12 of the inner row.

*Comparative measurements in millimetres.*—♀. Carap. 6.75 long., 6 lat. Abd. 7.5 long., 5.75 lat. Ceph. area 5.25 long. Stern. 3 long., 3.75 lat. Coxa of pedipalp 3 long., 1.5 lat. Pedes, long. i. 20—ii. 15—iii. 13—iv. 20. Artl. i. long. 3—1—5—2—4—3—1.75; iv. 2.5—1.75—5—2—4—4.5—2. Postr. mam. 3 long.; artl. 1—1—1.25. Antr. mam. absent. Mandib. 3 long.

A single female, agreeing almost entirely in general appearance with the female of *Paratropis papilligera*, was taken under a log in the damp forest at Breves, on the Lower Amazons, near the Island of Marajo.

## Genus ANISASPIS, E. Simon.

Type. *A. tuberculata*, E. Sim. (♀), Proc. Zool. Soc. 1891, p. 549. Hab. St. Vincent, West Indies. 4-6 mm. long.

Types, three females in coll. Brit. Mus. Nat. Hist.<sup>1</sup> (Plate XXXIV. figs. 3, 4, 5.)

Having carefully examined the three specimens referred to above, I find that, doubtless owing to an oversight by the author, they do not entirely agree with the generic diagnosis given in Hist. Nat. Ar. i. 1, 1892, p. 78, in, at any rate, one very important character—"Cephalothorax humilis et fovea carens." This character is certainly not distinctive of the type specimens. Being encrusted with grit, a feature which seems to be common to the females of this subfamily, and the central fovea being filled up, it doubtless escaped observation. From two of the three specimens however, this grit was carefully removed, and a distinct, deep fovea laid bare. The other specimen certainly to all appearance merits the description "*Cephalothorax humilis et fovea carens*"; but it is only in the appearance that it does so.

There are three characters, however, in which these type specimens differ from the female to which I have assigned a new generic position (*Anisaspoides*), as well as from *Paratropis*. Simon says of them:—"Mamillæ duæ—ultimo medio multo breviores et subrotundatæ"; "*parte labiali apice arcuata et remote spinulosa*"; and "*pedum ungue inferiore nullo*."

Whether the last of these characters is of any real significance for purposes of classification in a group in which there is evidently a tendency towards obliteration of the inferior tarsal claw, I am not in a position to judge; but, for the present, one would scarcely be justified in including in a genus, of which one of the chief characters lies in the total absence of the inferior tarsal claw, a spider which possesses a distinct inferior claw on the tarsi of the first two pairs of legs.

A. Mamillæ four .....	<i>Paratropis</i> , Sim.
B. Mamillæ two .....	
1. Claws on anterior tarsi—i. and ii.—three.....	<i>Anisaspoides</i> , n. g.
2. Claws on all four tarsi—i., ii., iii., and iv.—two only.	<i>Anisaspis</i> , Sim.

## Genus ACTINOPUS, Perty, 1833.

(Type, *A. tarsalis*, Perty.)

ACTINOPUS WALLACEI<sup>2</sup>, n. sp. (Plate XXXV. fig. 18.)

♀. Hab. Santarem. Type in coll. Brit. Mus. Nat. Hist. 1896.

Colour.—Carapace pale testaceous brown, cephalic area darker. Base and centre of thoracic area pale testaceous. Base of mandibles very dark brown, clothed along the ridge and over the apex

<sup>1</sup> The specific name under which the type is described in *op. cit.* is "*tuberculata*," not "*bacillifera*" as quoted, no doubt by an oversight, in Hist. Nat. Ar. 1892, i. 1, p. 78.

<sup>2</sup> I have much pleasure in connecting this species with the name of Mr. W. Wallace (senior), of Santarem, through whose courtesy I was enabled to spend a fortnight in the heart of the forest, lodging in his plantation at the Sitio Andirobal.



with long pink hairs. *Abdomen* pale ochre-yellow, almost naked, clothed with fine short scattered hairs. *Sternum* pale testaceous; labium, coxæ of legs and pedipalp, and upperside of legs darker; underside of legs paler testaceous.

*Carapace* 8 mm. long; 7 mm. broad; 3 mm. wide at base. Cephalic area very prominent and raised above the thoracic area; broad in front, narrowed and compressed behind, with a deep impression on either side. Thoracic area bilobate behind, with a deep impression on either side towards basal angles. Anterior row of eyes slightly procurved; centrals very small, two diameters apart, six from laterals. Lateral anteriors within one transverse diameter from margin of clypeus. Anterior row very slightly wider than posterior. Central posteriors reniform, their axis usually distinctly longer than diameter of posterior laterals; rather over one transverse diameter from the latter. (These proportions are variable.) Base of mandibles with a *rateau* in front, furnished with numerous spicules. *Fang-groove* armed with 4 stout teeth on the outer margin, 6 on the inner, with intermediate cusps between the two rows.

*Sternum*, including labial plate, 7 mm. long, 4 mm. broad. Five pairs of sigilla clearly marked: 1st pair at base of labium, on either side; 2nd pair at base of labium behind, coalesced to form a deep longitudinal furrow; 3rd, 4th, and 5th longitudinal; central convergent, far remote from margin, coalescing to form a deep central depression. *Spinners* four, posterior pair three-jointed; basal joint longest, terminal very short, tuberculate. *Labial plate* not distinct from rest of sternum; longer than broad, its apex studded with a few minute cuspules. *Coxa of pedipalp* as long as broad; its anterior distal angle produced; anterior basal angle and whole of inner margin of disc studded with minute cuspules. *Patella* armed on outside with 2 small distal spines, on inner side with 5 or 6 long spines; tibia and tarsus armed on both sides with numerous longer and shorter spines.

*Legs*. Tarsus and protarsi i. and ii. armed on outer sides with numerous spines. Tibia i. with one or two minute spines or none on inner side; outer side with a few. Tibia ii. with none on inner side; with numerous spinules on outer side. *Patella* and tibia iii. with numerous spines on either side and along the anterior margin at apex. Protarsus and tarsus iii. with numerous spinules on either side. *Patella* iv. with numerous spines on outer side, and 5 or 6 along apical outer margin; protarsus iv. with one or two at apex; tarsus iv. with several on either side.

*Measurements in millimetres*.—*Carapace* 8 long, 7 broad. Total length, including base of mandibles, 25. *Sternum*, including labial plate, 7 long, 4 broad. *Pedipalp* 15 long. *Legs* i. 16, ii. 16, iii. 16.5, iv. 20 long: all from base of coxa.

Two specimens (♀) were taken from the sand on the campo close to Santarem, while digging out a tube of *Santaremia pococki*; and a little later a colony of about twenty was found on the same campo, nearer the forest. These, all females, had constructed

their tubes, six or eight inches long, silk-lined, with hinged doors at the entrance, in the sides of a large termite mound, whose damp walls afforded exactly the locality needed for such nests. No males were taken.

The following species have been described which probably belong to the same genus:—

*Actinopus tarsalis*, Perty, Del. Anim. Art. 1833, p. 39, fig. 6. Brazil.

*A. rufipes* (Lucas), ♀ (sub *Pachyloscelis*), Ann. Soc. Ent. Fr. 1833, p. 361. Brazil.

*A. scalops* (Sim.), ♀, ceph. 10 mm. long. (sub *Pachyloscelis*), Ann. Soc. Ent. Fr. 1889, p. 176. Venezuela.

*A. caraïba* (Sim.), ♀, ceph. 9.5 mm. long., Ann. Soc. Ent. Fr. 1889, p. 175. Caraccas; Venezuela.

*A. valencianus* (Sim.), ♀, ceph. 5.3 mm. long. (pullus), Ann. Soc. Ent. Fr. 1889, p. 177. Valencia, Venezuela.

*A. rojasi* (Sim.), ♀, ceph. 7 mm. long. (non plane adulta), Ann. Soc. Ent. Fr. 1889, p. 176. Caraccas; Venezuela.

*A. longipalpis*, C. K., ♂, Die Arachniden, ix. p. 102, pl. cccxxiv. fig. 754. Montevideo. (Type in coll. Mus. Berlin.)

*A. nattereri*, Auss., ♀ (Doleschall in MS.), Verhandlungen &c. 1871, p. 139. Rio Negro.

*A. liodon*, Auss., ♂, Verhandlungen &c. 1875, p. 142. Uruguay. (Type in coll. Brit. Mus. Nat. Hist.)

*A. crassipes* (Keys.), ♀, Spinnen Amer. iii. p. 3, pl. i. fig. 1. Taguara, Rio Grande do Sul. (Type in coll. Brit. Mus. Nat. Hist.)

*A. luteipes* (Keys.), ♀ (immature), Spinnen Amer. iii. p. 5. Rio Janeiro. (Type in coll. Brit. Mus. Nat. Hist.)

*A. insignis*, Holmberg, Ann. Soc. Argent. xi. p. 171, 1886. Argentine Republic.

*A. piceus*, Auss., ♂, Verhandlungen &c. 1871, p. 139. Locality unknown.

*A. hartii*, Poc., ♀, Ann. Mag. Nat. Hist. ser. 6, vol. xvi., Aug. 1895. Trinidad. (Type in coll. Brit. Mus. Nat. Hist.)

The following table may be of some assistance in distinguishing the females of the seven species of which we have adequate descriptions or type specimens.

The value of the characters, however, especially those drawn from the eyes, entirely depends upon the number of specimens compared before the character fixed upon was set down, and for this of course I cannot be responsible.

Out of thirteen examples of *A. wallacei* (♀) in all stages of development, I find that the central posterior eyes are sometimes smaller, sometimes equal to, and sometimes larger than, the posterior laterals. Sometimes these are almost in contact with one another, sometimes two diameters apart. In the immature especially, the posterior centrals are closer to, and smaller than, the laterals. Amongst the adults, in the majority, but not in all, the axis of the central posteriors is longer than the diameter

of the lateral posteriors and  $1\frac{1}{2}$  a transverse diameter of the former from them. Taking another character—the spinulation of tibia i.: in some of these examples there are no spines, in some 1, in others 2 or 3; while in one case, tibia i. left side had 2 spines, tibia i. right side had none. The central anterior eyes are sometimes 2, sometimes 3 diameters apart; while the lateral anteriors vary greatly in their distance from the margin of the clypeus, in the immature being quite close<sup>1</sup>.

Given, however, plenty of examples of each form, I have no doubt but that certain characters might be tabulated which would be broadly true of the various forms, but only then to be used with caution.

Of the three forms—*A. hartii*, *A. crassipes*, and *A. wallacei*—of which I have been able to compare the actual types, the form of the cephalic area furnishes a good differential character, while the spinulation of tibia i. furnishes another, and the form of the sternum a third. But of these species I have seen only five examples (females) of *A. hartii* and one (female) of *A. crassipes*. I venture to think that no satisfactory conclusions will be arrived at until arachnologists are willing to hand over all available material of a particular genus to some one or other who is prepared to take the trouble to thoroughly compare every specimen and tabulate the characters. At present there is confusion of tongues and hair-splitting disputation concerning the fraction of a difference in the distance between particular eyes, whereas the examination of a long series usually proves that these same disputed distances are themselves constantly variable quantities in the same form.

The table given below will probably need considerable modification when a long series of forms is subjected to examination.

A. Tibia i. with a series of 5-13 spines on inner side.	
1. Anterior row of eyes a little wider than posterior.	<i>A. caratha</i> , Sim.
2. Anterior row of eyes not wider than posterior.	
a. Tibia i. with 5-6 spines on inner side; tibia ii. without spines on inner side .....	<i>A. scalops</i> , Sim.
b. Tibia i. with 9-13 spines on inner side; tibia ii. with 1-3 spines on inner side .....	<i>A. hartii</i> , Poc.
B. Tibia i. without any spines, or with 1-3 only on inner side.	
I. Central posteriors smaller than laterals.	
1. Central posteriors scarcely smaller than laterals.	
a. Tibia i. with three small spines on inner side.	<i>A. crassipes</i> , Keys.
b. Tibia i. without any spines on inner side .....	<i>A. rajast</i> , Sim.
2. Central posteriors much smaller than laterals...	
II. Central posteriors subuniform, larger than laterals.	<i>A. valenciannus</i> , Sim.
	<i>A. wallacei</i> , mihi.

The characters of *A. hartii* and *A. crassipes* have been taken from the types; the characters of the other species are taken from M. Simon's descriptions (Ann. Soc. Ent. Fr. 1889, pp. 176-177). They must, however, be used with caution.

<sup>1</sup> Mr. Pocock has observed similar differences in the characters at different stages of *A. hartii*, Ann. Mag. Nat. Hist. ser. 6, xvi. p. 195.

*A. luteipes*, Keys., of which I have examined the type (a young female), appears to me to be undoubtedly the young of *A. crassipes*, Keys.; the form of the cephalic area, broad behind and only slightly impressed at the sides, is very characteristic of the latter, and agrees in this respect with *A. luteipes*, Keys.; whereas in *A. hartii* and *A. wallacei* the cephalic area is much narrowed behind and deeply impressed on either side.

Of *A. tarsalis*, Perty, *A. rufipes* (Lucas), and *A. nattereri*, Auss. (Dol. in MS.), females, I will not venture to speak; nor can I deduce any satisfactory characters from those given by Ausserer.

Of the males, of which I have examined only *A. hodon*, Auss., I am at present unwilling to speak; the other males are *A. longipalpis*, C. K., and *A. piceus*, Auss.

One would not be inclined to attach too great value to the characters of *A. valenciannus*, Sim., seeing that the specimen is evidently quite young ("*pultus*," sec. Simon).

#### Genus ACANTHODON, Guérin.

Type. *Acanthodon petitiü*, Guérin (♀), Rev. Zool. Soc. Cuv. 1838, p. 10. In coll. Brit. Mus. Nat. Hist. (Plate XXXIV. figs. 9, 10, 11, 12.)

This specimen, now upwards of sixty years old, is still in existence. A short description of it remains may be useful.

*Carapace* 10.75 long., 9 lat.; cephalic area two-thirds the length of carapace, gibbous, and slightly bilobate, depressed towards the clypeus. Width (longitudinally with respect to carapace) of ocular tumulus equal to distance from posterior margin of posterior row of eyes to the posterior margin of anterior row of eyes. Its length one and a half times its width. *Eyes*. Anterior centrals half a diameter apart; posterior centrals three diameters apart, nearly two diameters from posterior laterals; one and a half or even more from anterior centrals. Anterior laterals set on a low, bilobate tubercle, half a diameter apart, distant from the anterior centrals a space equal to width of the ocular tumulus, from anterior margin to posterior margin. *Fovea* deep, procurved. *Mandibles* with the rastellum consisting of numerous stout teeth. Fang-groove armed with a row of 8 stout conical teeth on the inner margin; 5 smaller ones on the floor, opposite nos. 5-8 of inner row, near the outer margin, which is fringed with coarse rufous hairs.

*Sternum* too damaged to furnish any useful character. *Labium* longer than broad, slightly narrower towards apex, furnished with a single central transverse pair of cusps. *Coxa of pedipalp* twice as long as broad, furnished with numerous cusps on the anterior apical and basal angles, besides others studded on the anterior surface. *Tarsi* three-clawed; superior pair armed with a single denticle towards the base. *Tarsi* and *protarsi* i. and ii. cuspidate on either side. The spinners are almost obsolete through age, and several of the legs are missing.

*ACANTHODON SANTAREMIA*, n. sp. (Plate XXXIV. fig. 13.)

♀. *Hab.* Santarem, Lower Amazons. 16 mm. long. Type in coll. Brit. Mus. Nat. Hist.

♀.—*Colour.* Carapace dull orange-brown; mandibles the same, darker towards apex. Sternum and legs also dull orange-brown; tarsi slightly darker. Abdomen dull olive-brown; spinners paler.

*Carapace* a little longer than broad; cephalic area more than half as long as carapace; strongly gibbous immediately in front of central fovea, slightly bilobate longitudinally, gradually depressed to margin of clypeus. Cephalic and thoracic indentations short but deeply impressed, especially the posterior pair. Central fovea deep, procurved. Margin of carapace raised and sinuous towards base, the latter truncate.

*Eyes* in two separate groups. Anterior laterals circular, situated on a bilobate tubercle at the margin of the clypeus; less than half a diameter apart. Anterior centrals and posteriors situated on a low tumulus, two full diameters of the former behind the anterior laterals. Anterior centrals circular, half a diameter apart, not quite one diameter from lateral posteriors; the latter ellipsoidal, very narrow, and pointed behind. Posterior centrals two full diameters apart, nearly one diameter from posterior laterals, half a diameter from anterior centrals. Posterior row only slightly procurved.

*Mandibles* furnished with a rastellum formed of numerous stout conical teeth projecting beyond the apex. Fang-groove fringed on both sides with rufous hairs; inner margin armed with a row of eleven irregular stout teeth. Floor of fang-groove studded with a short row of five small teeth opposite nos. 7 and 11 of the inner row.

*Labium* as broad as long, narrowed towards apex, bears two stout cusps situated transversely in the centre. *Coxa of pedipalp* double its breadth; anterior apical angle slightly produced and armed with a cluster of 5 or 6 stout cusps. Anterior basal angle armed with a curving row of 5 or 6 cusps, while the whole inner surface is studded with numerous small cusps.

*Sternum* longer than broad, convex, smooth, set with stiff, black, scattered hairs. Sigilla i., ii., and iii. present; the first two marginal and indistinct, the latter submarginal, distinct, and situate opposite the coxa of the second pair of legs.

*Legs* 4, 1, 3, 2. Femora without spines; tibia, protarsus, and tarsus of first pair armed with cusps on both sides, more numerous on the outer side. Tibia ii. armed with numerous cusps on inner margin only, with two long spines and two minute cusps only on outer margin. Protarsus ii. with numerous cusps on the inner side; on the outer several cusps and three short, stout spines, in a longitudinal row, beneath. Tarsus ii. armed on both sides with cusps. Tibiæ iii. and iv. without spines or cusps. Patella iii. with cusps on outer side; protarsus iii. with spines and cusps, on either side, above; and below in a series of 2—2—2. Tarsus iii. with a few short cusp-like spines on either side. Patella and

tibia iv. without any cusps or spines. Protarsus and tarsus iv. with a few spines beneath. *Pedipalp*. Femur and patella without cusps; protarsus and tarsus armed with numerous marginal cusps on either side. Tarsal claws three, on pedipalp one only, superiors armed with a small single denticle towards the base beneath. No scopula at all present.

*Spinners* four; posterior pair very short, less than one quarter as long as abdomen. Second joint half the length of basal; terminal half the length of the second. Anterior pair half the length of basal joint of posterior, one diameter apart, not closely contiguous.

*Comparative measurements in millimetres*.—♀. Carapace 7 long., 6 lat. Abd. 9 long., 6 lat. Ceph. area 4 long. Coxa of pedipalp 2.5 long., 1.5 lat. Stern. 4 long., 3.5 lat. Pedes, long. i. 17—ii. 15—iii. 16—iv. 21. Artl. i. long. 2.5—1—5—2—3—3. Artl. iv. long. 2.5—1—5.5—2—4—3.5—2. Posterior mam. 2 long.; artl. 1—5—2.5. Ant. mam. .5 long., .25 apart. Mandib. 3 long.

A single specimen of the female sex was taken by myself amongst fallen mango-leaves in a clearing in the forest of Santarem in March 1896.

*Species already described from the Neotropical Region.*

Of the various species of *Idiops* which have been already described from South America, some of them possibly belonging to the genus *Acanthodon*, the following appear to me to be quite different from *A. santaremi*.

*Idiops rohdei*, Karsch (♀), Berl. ent. Zeit. xxx. p. 93. ♀, long. 16 mm. *Hab.* Paraguay?—Although most of the characters given in this diagnosis are common to the whole genus, the statement “labio ad apicem irregulariter denticulato” certainly does apply to my species.

*Idiops fuscus*, Perty (♂), Delect. Anim. Art. 1833, p. 197, tab. 39. ♂. *Hab.* Piaui, Brazil.—The position of the eyes—“oculi 8: 2 antici, 2 majores medii, et pone hos 4 in lineam curvam dispositi”—is not the same as in *A. santaremi*.

*Idiops argus*, Sim. (♀), Ann. Soc. Ent. Fr. 1889, p. 180. ♀, long. 16 mm. *Hab.* Venezuela.—The description of the labium, “Pars labialis ad apicem spiculis 5–6 minuta,” clearly excludes my species.

*Idiops fulvipes*, Sim. (♀), Ann. Soc. Ent. Fr. 1889, p. 181. ♀, long. 8 mm. *Hab.* Venezuela.—Of this species Simon says “Præcedenti valde affinis,” referring to *I. argus*, Sim.; and since he does not refer to the armature of the labium, one must infer that it is similar to that of the closely allied form.

*Idiops bonapartei*, Van Hasselt, Tijdschr. Ent. xxxi. 1888, p. 166. ♀, long. 14 mm. *Hab.* Surinam.—“Labium serie transversâ 7-denticulorum armatum.” *A. santaremi* has but 2.

*Idiops germani*, Sim. (♂), Hist. Nat. Ar. 2nd ed. i. 1, p. 92

(1892). ♂, long. 14 mm. *Hab.* Rio, Brazil.—Of this species Simon says:—"Tarsi cuncti subtus scopulati," and also "Partes oris. . . (omnino muticæ)."

Genus HOMEOPLACIS, E. Simon.

Type. *H. pentodon*, E. Simon (♀), Ann. Soc. Ent. Fr. 1892, p. 275. ♀ 11·8 long. *Hab.* Brazil, S. Paulo de Olivença.

HOMEOPLACIS AUSTENI, n. sp. (♂)<sup>1</sup>. (Plate XXXIV. figs. 14, 15, 16 a & b.)

♂. *Hab.* Manãos, Lower Amazons. 12 mm. long. Type in coll. Brit. Mus. Nat. Hist.

♂.—*Colour.* Carapace, sternum, and legs dull orange-brown. Abdomen mouse-grey.

*Carapace* marked on the caput with three dark longitudinal lines, the central narrower, with a central and two lateral series of stiff curving black bristles. Thoracic area with converging lines of black bristles. Central fovea deep, procurved. Margin of carapace fringed with stiff curving black bristles.

*Abdomen* shorter and narrower than carapace, clothed with dark mouse-grey pubescence and black hairs. *Spinners* four; pale straw-yellow; shorter than abdomen. Posterior pair three-jointed, with pseudo-joint at base; basal joint longest, middle joint half its length, terminal much shorter, globular. Anterior pair half the length of basals of posterior pair, almost contiguous. Mandibles brown; sternum pale straw-yellow, furnished with black hairs.

*Carapace* longer than broad; cephalic area less than two-thirds the length of carapace; central fovea deep, procurved.

*Ocular tumulus* low, quadrate, narrower in front. Eyes opaline, set in a black ground. Anterior centrals large, half a diameter apart, not larger than anterior laterals, these being in front and close to the margin of the clypeus, half a diameter apart. Posterior laterals a little smaller than anterior centrals, and nearly one diameter from them. Posterior centrals very small, one diameter from anterior centrals, half a diameter from posterior laterals.

*Mandibles* dark brown, furnished at apex with a *râteau* formed of five long stout teeth or modified hairs. Fang-groove fringed on the outer side with a dense line of bright rufous hair; the inner margin furnished with a row of 8 stout conical teeth; the floor towards the base studded with a very few minute cusps.

*Sternum* longer than broad. Sigilla i., ii., iii., iv. present, marginal, the last three pairs scarcely noticeable.

*Labium* broader than long, globular, not furnished at its apex with cusps.

<sup>1</sup> I have much pleasure in associating this species with the name of Mr. H. H. Austen, to whom I am indebted for calling my attention to the specimen when collecting together near Manãos

*Coxa of pedipalp* three times its breadth, not produced at anterior angle; bearing on the inner basal angle three sharp black cusps set in a curving row.

*Legs* 4, 1, 2, 3, clothed with fine rufous hairs, black curving bristles, and black spines. Tarsi i. and ii. with two claws and a claw-tuft; claw armed with a minute denticle rather before the middle, beneath; scopulate. Tarsi iii. and iv. with two claws and a claw-tuft, the claws bearing no denticle; very slightly clothed beneath with scattered scopuliform hairs. Protarsi i. and ii. with slight scopula at apex and two stout spines, one apical, the other basal, beneath; iii. and iv. with numerous spines. Tibia i. bearing at its apex on the inner side, beneath, a pair of stout curved spines set in juxtaposition to each other, with five ordinary spines, 2—1—3 beneath, and one on the inner side. Tibia iii. and iv. with numerous spines. Femora of all four pairs with five or six spines above.

*Pedipalp.* Femur with a few spines at apex above. Tibia fringed on either side beneath with long hair, and six spines on the inner side, two on the outer. Tarsus short, half the length of tibia. Bulb short, pyriform, transverse, its stylum very short, curved, directed outwards and backwards.

*Comparative measurements in millimetres.*—♂. Carap. 6.5 long., 5.5 lat. Abd. 5.5 long., 3.5 lat. Cephalic area 4 long. Stern. 3.25 long., 2.5 lat. Coxa of pedipalp 2.5 long., 1.25 lat. Pedes, long. i. 25—ii. 23—iii. 20—iv. 30. Artl. i. long. 3.25—1.25—6.5—3—5.5—4—3. Artl. iv. long. 3—1—7.5—2—6—8.5—2.5. Postr. mam. long. 3.5; artl. 1.5—1—5. Antr. mam. .75.

My attention was called to a fine specimen, an adult male, of this species by Mr. E. E. Austen when collecting in the neighbourhood of Manãos, Amazonas, in February 1896, and I have great pleasure in connecting his name with the species. The generic characters which distinguish *Homœoplacis* from *Barychelus* are well marked. Cephalic fovea procurved; rastellum at apex of mandible consisting of five separate teeth; coxa of pedipalp armed near the base with only a few (3-4) small cusps; ocular tumulus narrower in front.

M. Simon apparently does not know the male of the species he has made the type of his genus, so that no mention is made of the spines at the apex of the tibiæ of the first pair of legs.

*Species described.*—*H. pentodon*, Sim. op. cit. p. 275.

It is possible that the Spider described above may be the male of the one described by Simon; but it is not easy to identify a specimen of this sex from a description of the female. He says of it—"Parte cephalica vittis duabus;" of *H. austeni* one would rather say—"Parte cephalica lineis tribus;" and again he says: "parte thoracica lineis radiantibus, lineaque marginali obscurioribus notatis"; whereas in my specimen there are no radiating lines and no marginal dark line.



## Genus ACANTHOSCURRIA, Ausserer, 1871.

Syn. 1842. *Mygale*, C. Koch, Die Arachniden, ix. p. 43, fig. 718.1850. *Scurria*, C. Koch, Uebersicht, v. p. 74.Type. *A. geniculata* (C. K.), ♂. In coll. Imp. Mus. Berlin.  
*Hab.* America.*Generic Characters.*

*Legs spinose. Patella and tibia iv. shorter, or not longer than patella and tibia i. Tibia i. of ♂ armed with a single spur at apex. Anterior row of eyes more or less slightly procurved. Femora iv. clothed on inner side with thick short soft hairs, forming a velvety pad. Sternal sigilla visible—1st pair at base of labium; 2nd marginal; 3rd submarginal; 4th remote from margin.*

ACANTHOSCURRIA GENICULATA (C. Koch). (Plate XXXIV. fig. 17.)

♀. *Hab.* Santarem. In coll. Brit. Mus. Nat. Hist. 1896. Length 70 mm., including base of mandibles.

♀.—*Colour.* Carapace mahogany-brown, clothed with short grey velvety pubescence. Clypeus fringed with yellow-pink hairs. Mandibles black, clothed with short grey hairs and long rufous-pink hairs. Abdomen black, velvety, clothed with long rufous-pink hairs; black, velvety, beneath. Sternum and coxæ of legs deep black-brown. Coxæ of pedipalp and labium pale red-brown; inner margins fringed with fiery-red hairs and long rufous hairs. *Underside* of legs black-brown, clothed with long rufous-pink hairs, the distal end of each segment fringed with cream-pink hairs. *Upperside:* femora black, with grey pubescence, outer side fringed with long rufous-pink hairs. Patella, tibia, and protarsus and tarsus of i., ii., iii., iv. rich black-brown; the distal end of each segment and of the femur broadly tipped with short creamy-pink hairs, forming a richly contrasting annulation. Patella and tibia i. and ii., less so of iii. and iv., marked with a pair of longitudinal rufous-pink lines of short hairs. Protarsi i., ii., iii., iv. with a short basal central rufous line. The pedipalp is similarly marked. The legs are everywhere clothed with long silky rufous-pink hairs.

*Carapace* 26 mm. long, 24 mm. broad; gibbous behind eyes, with a depression on either side. Central fovea small, slightly recurved. *Eye-tumulus* longer than broad (more so than in *A. brocklehursti*). Centrals a full diameter apart, nearly a diameter from the laterals; their diameter distinctly less than axis of anterior laterals. Anterior row of eyes more strongly procurved than in *A. brocklehursti*. *Mandibles* 15 mm. long. Fang short, only slightly incrassate in middle below; fang-groove armed with a single row of teeth on inner side, fringed on both margins with fiery-red hairs, thickly on outer side, more thinly on inner side. *Sternum* 15 mm. long, 10 mm. broad; elongate oval. Four pairs of sigilla visible: 1st at base of labial plate; 2nd marginal; 3rd submarginal; 4th

remote from margin. *Labium* longer than broad, its apex studded across entirely with cuspules. *Coxa of pedipalp* more than twice its breadth; anterior distal angle produced; anterior basal angle studded with cuspules, more scattered and fewer towards disc.

*Legs* spinose; fourth pair longest. Tarsi and almost the whole of protarsi i. and ii. thickly scopulate; of iii. tarsus and half protarsus, of iv. distal end, of protarsus slightly, and tarsus, scopulate. Femur iv. with velvet pad on inner side. Tarsal claws 2; inner claw with 7, outer with 3 denticles, of first pair of legs. *Spinners* 4; posterior pair a little less in length than tibia i.

So far as I am aware, the female of this magnificent Spider has never been fully described, and the specimen taken is the first of this sex which has come into the possession of the British Museum of Natural History. *A. geniculata* is apparently not a rare Spider in the Amazonian forest. One female was found by Mr. Austen in a hollow tree at Breves, but we were unable to secure it. I saw, also, more than one far down in the burrows of the Termites, underground, where it was useless to attempt a capture. The young ones to the number of a hundred or more crowded the entrance to one of these dens, running about over a broad thin sheet of webbing. The specimen described was, however, taken by myself from the hollow branch of a tree which had fallen in the forest near Santarem, the only one I was able to secure.

Its presence was first detected by the slight white web spun over the end of the short decayed hollow stump, while far down within could be seen the pale banded legs of the spider. Fortunately—whether it is always the case or not I cannot say—there was also a bolt-hole, so that, after rattling with a stick down the hollow, out burst the spider with a strange rustle and pattering of its padded feet. Had it not been for the noise, I should probably not have noticed it, for I never suspected an exit at the other end.

With gloved hand in front and large prune-jar held open behind her, she stopped, but made no attempt to attack or bite at the obstacle in front. But now, when pressed, with lightning speed she whisked off a small cloud of fine down from the back of the abdomen on the upperside with the claws of the fourth pair of legs. Pressing her in front, she went backwards into the jar, and at once was secured. Mr. Bates mentions the poisonous character of the hairs of these great Spiders, he himself having suffered from them; and one has often observed a bare patch on the upperside of the abdomen, at its apex, of many of them, whence the fine pubescence has been apparently rubbed off. Putting these two links together, and connecting them with the action which I witnessed, I am convinced myself—though I should need far more proof before I would definitely assert that such was really the case—that the spider whisks off these fine hairs in order to protect itself. It is true that, though I caught upwards of 150 large Spiders, I never saw *one*, except the above, act in this way,

though the *Avicularias* certainly scarcely had a chance, for I usually caught them under a handkerchief or glove, when the legs could not be used in the way described above. Still it is quite possible that they also act in the same way, for the abdomen of *Avicularia* was in many cases entirely devoid of pubescence. *Santaremia pocockii*, however, had plenty of chances, but never made use of this method of defence, so far as I observed, nor were their abdomens in any case bare of pubescence.

This handsome Spider is probably the Bird-eating Spider described and figured by Bates in his 'Naturalist on the Amazons,' though I found nothing save beetle relics (*Longicorns* chiefly) in the bottom of the hollow where *A. geniculata* lived. So far as I know no account of the whisking off of irritating hairs by *A. geniculata* or any "Mygale" has ever been published, if ever observed.

There can be little doubt but that the *A. geniculata* here described is identical with the specimen in the Berlin Museum. This, a male, has been figured by Koch, and a male specimen in the British Museum of Natural History agrees well with the figure. The annulations on the legs are its chief characteristic. Whether Ausserer saw the type male or not, I cannot say, but he may have taken his descriptions from Natterer's specimen from the Rio Branco, Brazil. The female of this species is an addition to the National collection.

ACANTHOSCURRIA BROCKLEHURSTI, n. sp. (Plate XXXIV. fig. 18.)

♀. *Hab.* Para. Type in coll. Brit. Mus. Nat. Hist. 1896. Length 60 mm., including base of mandibles.

♀.—*Colour.* Carapace deep brown, clothed with grey-brown velvety pubescence. Margin of clypeus fringed with fine pink-tipped grey hairs. Base of mandibles thickly clothed with short grey pubescence and longer scattered rufous hairs. Abdomen clothed with deep brown velvety pubescence and long scattered rufous hairs; ventral surface velvet-black. Sternum and coxæ of legs velvety, clothed with rich chocolate-brown pubescence. Labium and coxa of pedipalp pink, clothed with long pale-orange hairs, inner margin fringed with fiery-red hairs. Underside of base of mandibles pink; margins of fang-groove fringed with fiery-red hairs. Legs clothed entirely with rich chocolate-brown pubescence and long scattered rufous hairs, apex of each segment fringed with short cream-pink hairs. Patellæ of i., ii., iii., and iv. exhibiting two longitudinal lines of short rufous hairs.

*Carapace* 22 mm. long, 20 mm. broad; gibbous behind eyes, with a depression on either side. Central fovea deep, transverse-procurved. *Eye-tumulus* a little longer than broad, oval, prominent. Anterior row of eyes almost straight, procurved; centrals scarcely one diameter apart (a little less from laterals), their diameter distinctly greater than axis of laterals. *Mandibles* 13 mm. long. Fang short, incrassate about the middle. Fang-groove with a row of teeth along inner margin; both margins fringed with red hairs, outer thickly, inner thinly. *Sternum*

11 mm. long, 7 mm. broad, elongate oval; with four pairs of sigilla visible—1st pair at base of labial plate, 2nd marginal, 3rd submarginal, 4th remote from margin. *Labium* broader than long, apex armed along its entire width with cuspules. *Coxa of pedipalp* scarcely twice its width; anterior distal angle slightly produced; anterior basal angle armed with cuspules, becoming fewer and more scattered towards the disc.

*Legs* spinose; fourth pair longest. Tarsi and three-fourths of protarsi i. and ii. scopulate; of iii. tarsi and half protarsi, of iv. tarsi and very slightly at the apex of protarsi, scopulate. Femur iv. with velvet pad on inner side. Tarsal claws 2; inner with 7 denticles, outer with 6. *Spinners* 4; posterior pair as long as tibia ii.

This species is very much smaller than *A. geniculata*, from which it differs, first in the relative length of the first and fourth pairs of legs, secondly in the proportion of the anterior eyes. Its tarsi and protarsi, too, are much less broadly padded with scopular hairs.

A single female from Pará; from a native palm-thatched hut.

I have much pleasure in connecting this fine species with the name of Mr. Brocklehurst, to whom we are indebted not only for this specimen and many others, but also for great courtesy in rendering every assistance in his power to further the success of the expedition. This species is an addition to the National collection.

The following species have been described and their differential characters diagnosed by M. Simon (Ann. Soc. Ent. Fr. 1892, p. 280):—

*A. musculosa*, E. Sim., ♂, op. cit. p. 281. San Mateo, Bolivia (Garlepp).

*A. maga*, E. Sim., ♂, op. cit. p. 280. America Meridionalis.

*A. minor*, Auss., ♂, Verhandlungen &c., 1871, p. 206. Guiana.

*A. insubtilis*, E. Sim., ♂, op. cit. p. 282. San Matco, Bolivia (Garlepp).

*A. ferina*, E. Sim., ♂, op. cit. p. 282. Teffe, Amazonas.

#### Genus AVICULARIA, Lamarck, 1818.

*Avicularia*, Lamarck, Anim. sans Vert. v. 1818, p. 107.

Syn. *Aranea*, Linnæus; DeGeer; Kleemann (in part).

*Mygale*, Latreille; Walckenaer; Hahn; Lucas (in part).

Type.—Figures of two males in 'Dissert. Gen. Metamorph. Insect. Surinam.' pl. xiii. (1726): Madame M. S. Merian.

#### Generic Characters.

*Anterior row of eyes strongly procurved. Legs of first pair shorter than those of fourth. Four pairs of sternal sigilla visible—1st at base of labial plate; 2nd marginal; 3rd marginal; 4th submarginal. Posterior pair of spinners longer than width of sternum. Carapace nearly straight (in profile) behind the eyes. Patella and tibia iv. longer than carapace. Protarsus and tarsi i., ii., iii., and*

iv. broad, spatuliform. Habits arboreal; forming silken cylinders in hollow trees or amongst foliage.

AVICULARIA AVICULARIA (Linn.), 1758. (Plate XXXIII. figs. 10, 11; Plate XXXIV. fig. 19; and Plate XXXV. fig. 13.)

*Probable synonyms.*

1746. *Aranea avicularia*, Linn., Kleemann's Supplement to Rösels's Iconographie, i., pls. xi., xii.

1758. *Aranea avicularia*, Linn. ♂, Syst. Nat. ed. x. i. p. 622.

1764. *Aranea avicularia*, Linn. Mus. Ludovicæ Ultricæ, p. 428: based on figures in Madame Merian, *op. cit.*

1767. *Aranea avicularia*, Linn., Syst. Nat. ed. xii. p. 1034.

1778. <sup>1</sup>*Aranea vestiaria*, DeGeer, Mémoires, tom. vii. p. 313, pl. xxxviii. fig. 8.

1793. *Aranea avicularia*, Linn., Fabricius, Ent. System. ii. p. 424.

1804. *Mygale avicularia*, Latreille, Hist. Nat. d. Crust. vii. p. 152, pl. 62. 1.

1805. *Mygale avicularia*, Walckenaer, Tabl. d. Aran. p. 4.

1806. *Mygale avicularia*, Latreille, Genera Crust. i. p. 82.

1820. *Mygale avicularia*, Hahn, Monographie der Spinnen, pl. i. fig. 3.

1837. *Mygale avicularia*, Walckenaer, Hist. Nat. d. Ins., Apt. i. p. 217.

1842. *Mygale avicularia*, Lucas, Hist. Nat. Crust. &c. i. p. 335.

1848. *Mygale testacea*, C. K., ♂, Die Arachniden, ix. p. 45, pl. ccciii. fig. 719<sup>2</sup>.

1848. *Mygale scoparia*, C. K., ♀, Die Arachniden, ix. p. 54, pl. cccvi. fig. 725<sup>3</sup>.

1871. *Avicularia vestiaria*, DeGeer, Ausserer, Verhandlungen &c., Wien, 1871, p. 201.

1892. *Avicularia avicularia* (Linn.), Simon, Hist. Nat. Araign. i. p. 171.

AVICULARIA AVICULARIA (Linn.).

♀. *Hab.* Para.

*Colour*.—Carapace mahogany-brown, clothed with converging lines of short grey-green hairs. Sternum, coxa of pedipalp, and legs velvety black; inner margin of former fringed with fiery-red hairs. Abdomen and legs clothed with black hairs beneath, becoming rufous above; third and fourth pairs clothed with long,

<sup>1</sup> The name *vestiaria* was evidently not intended by DeGeer as a specific name, but was only used as a term in the description. Ausserer, however, did not notice this and regarded it as a specific name, although the name *avicularia* in any case has priority. Perhaps Ausserer considered it inadvisable to have both generic and specific name the same, and the legitimacy of this combination in practical nomenclature is still a matter of disputation amongst scientists.

<sup>2</sup> This is possibly drawn from a faded specimen of *A. avicularia*, for Koch remarks that the figure is drawn from an old specimen.

<sup>3</sup> This figure is certainly similar in coloration to numbers of young *Avicularia* taken by myself in the neighbourhood of Para.

stiff, fiery-red hairs, especially the three terminal segments. Tarsi of all four pairs tipped with a broad bar of rufous hairs. Underside of tarsi of pedipalp, tarsi and protarsi of first and second pairs of legs, except extreme base of protarsi, tarsi and half the protarsi of third and the apex of protarsus of fourth pairs, furnished with a thick scopula. Tarsi of all four pairs and of pedipalp broad, spatuliform. Abdomen clothed on the sides with bright rufous, stiff and long hairs, these becoming obsolete towards the apex of abdomen above, disclosing an undercovering of short black hairs. Underside clothed with black hairs.

*Carapace* longer than broad, in proportion of 20:18; flat, not gibbous behind eye-tumulus. *Eye-tumulus* twice as long as broad, more or less prominent (variable). Anterior centrals one diameter apart, distant from anterior laterals a space equal to transverse diameter of latter. Anterior row only slightly procurved<sup>1</sup>. Central fovea deep, recurved. Fang-groove armed with a single row of short stout conical teeth, both margins fringed with long hairs; floor of groove studded with minute granules. *Sternum* with three pairs of sigilla visible—1st at base of labial plate, 2nd obsolete, 3rd marginal, 4th submarginal. *Labium* quadrate, its distal third entirely studded with minute cuspules. *Coxa of pedipalp* slightly more than twice its breadth; its inner basal angle studded with minute cuspules, as also is the basal inner disc, only more scattered; anterior inner angle produced, obtusely conical. *Legs* of fourth pair longer than those of first. Tarsus of pedipalp with one, of legs i., ii., iii., and iv. with two small stout hooked claws, their inner edges plain, not armed with denticles. *Spinning mamillæ* four; posterior pair trisegmental, second segment shortest. The whole three segments taken together one-third longer than width of sternum.

This is the form which is most abundant on the Amazons, occurring at Pará, Breves, Gurupa, Monte Alegre, Obydos, Santarem, &c., in almost any number and in all stages of development. Amongst the foliage the little yellow-legged immature of this species with black tarsi, the next stage with black oblique stripes on the abdomen, and many others, were in abundance. The adults constructed their tubular retreat in almost any locality which offered a more or less vacant cylindrical space. Of the hollow stumps of the Assai palm in the neighbourhood of Pará, which had been sawn off about 3 ft. from the ground, almost every one had its tenant. Further up the river, one found them in the folded leaves of bananas, and at Obydos and Santarem abundant in the half-grown condition in the hollow centre of the pineapple plant. Sometimes, too, their loose white irregular cylinder of

<sup>1</sup> In scarcely a single specimen are the eye-measurements the same, so inconstant and unreliable are characters drawn from the proportional size and separation of these organs. In some specimens the anterior row is much more strongly procurved, while the anterior laterals are distant from the centrals a space equal to the diameter of the latter.

silk, with one or more openings at the entrance, would be constructed amongst the palm-leaf thatch of the native houses.

The spiders would often be seen sitting near the tube on the outsides of the palm-stem, nor were they either very rapid in their movements or inclined to attack those who interfered with them; merely raising themselves on their hind legs in an attitude of defence.

I was not successful, however, in securing any clue to the nature of their food; no débris of any sort was to be found in the nest itself, nor did I even surprise one in the act of seizing or devouring its prey.

Males, too, were apparently very scarce, for not a single specimen of this sex was met with.

Beyond the raising themselves on the last two pairs of legs and striking with the mandibles, I noticed no habit worth mentioning. I might, however, call attention to the scrabbling, rustling, pattering noise made by the spider in running upon any dry substance. A pair of large *Avicularias*, striving to escape from an umbrella into which they have fallen from the banana leaves, make a most appalling noise. Such a noise is entirely unexpected from spiders whose feet are so well padded with soft hairs beneath; but whether the noise is made by the claws, which I doubt, or by the soft pad, which is difficult to believe, I am so far unable to decide.

*AVICULARIA AVICULARIA VARIEGATA*, subspecies nov. (Plate XXXIII. fig. 12, ♀.)

*Hab.* Itacoitiara, Lower Amazons.

Similar to the above in all respects except that the long hairs are grizzled with grey at the tips, and very thick, especially on the third and fourth pairs of legs. The apex of the tarsi, too, is tipped with a narrow band of pink hairs, while there is a noticeable and entire absence of the fiery-red hairs so characteristic of *Avicularia* on the legs. The abdomen, too, is clothed on the sides with long grizzled and delicate pink hairs, not fiery-red, while the whole body is of a delicate mossy-green tint, from the green-grey pubescence, harmonizing well with the foliage amongst which they live.

Of this beautiful variety I beat two specimens, females, into an umbrella from banana trees in the neighbourhood of Itacoitiara or Serpa, on the north bank of the Amazons, Feb. 7, 1896.

The most interesting point about these two varieties seems to be—judging of course entirely by the long series captured over a distance of a thousand miles inland on the Amazons—that as we went further west there began to be a tendency to grizzled hairs. One specimen in particular, taken from a banana tree in a clearing in the forest at Santarem, presents a distinctly intermediate character between these two extreme forms, the hairs of the first two pairs of legs being decidedly grizzled. It would have been very interesting to compare the males of the grizzled form, *variegata*, with males of the typical *Avicularia*; but fortune did not favour me in this respect.

One would be inclined to consider that possibly a separate species is in process of differentiation, and that the further westwards it extended the more decided might be the differential characters. Of course this is only a theory, as regards the latitudinal distribution of the forms, which would be at once upset by grizzled specimens from Pará, for instance. The difference, however, is so striking, that one would not hesitate to regard the grizzled form as decidedly a different species from the red, when alive in all the fresh beauty of its grey-green colouring; until careful comparison proves that the difference is, so far, but one of coloration, having apparently no structural counterpart.

*Species which probably belong to the genus Avicularia.*

1848. *Mygale hirsutissima*, C. K., ♀, Die Arachn. ix. p. 76. South America. In coll. J. Sturm, Nürnberg.

1848. *Mygale leporina*, C. K., ♂, Die Arachn. ix. p. 55. Bahia. Mus. Berlin.

1848. *Mygale diversipes*, C. K., ♀, Die Arachn. ix. p. 65. Brazil. Mus. Berlin.

1848. *Mygale leta*, C. K., ♀, Die Arachn. ix. p. 66. Porto Rico. Mus. Berlin.

1848. *Mygale cecilia*, C. K., ♀, Die Arachn. ix. p. 88. Porto Rico. Mus. Berlin.

1848. *Mygale detrita*, C. K., ♂, Die Arachn. ix. p. 86. Brazil. Mus. Munich.

1848. *Mygale walckenaeri*, Perty, Del. An. Artic. p. 191, t. 38. 2. Brazil.

1871. *Avicularia vulpina*, Auss., Verhandlungen &c., Wien, 1871, p. 202. Brazil.

1876. *Avicularia rutilans*, Auss., ♂, Verhandlungen &c., Wien, p. 184. New Granada.

1876. *Avicularia metallica*, Auss., Verhandlungen &c., Wien, p. 185. Surinam.

1889. *Avicularia velutina*, Sim., ♀, Ann. Soc. Ent. Fr. 1889, p. 213. Venezuela.

1890. *Avicularia holmbergii*, Thor., Ann. Mus. Genov. (2) viii. p. 399. Hab. ?

1891. *Avicularia glauca*, Sim., ♂, Ann. Soc. Ent. Fr. 1891, p. 312. Panama.

Genus TAPINAUCHENIUS, Ausserer, 1871. (Plate XXXIV. fig. 21.)

Syn. 1842. *Mygale*, C. Koch, Die Arachniden, ix. p. 67.

1850. *Eurypelma*, C. Koch, Uebersicht.

Type. *T. plumipes* (C. K.), ♂, Die Arachniden, ix. p. 67, tab. cecxi. fig. 733, 1842. In coll. Mus. Imp. Berlin.

*Generic Characters.*

<sup>1</sup> Anterior row of eyes straight or nearly so. Legs of first pair equal to those of the fourth. Three pairs of sternal sigilla visible—1st at



base of labial plate; 2nd almost obsolete; 3rd marginal; 4th sub-marginal. Posterior pair of spinners a little longer than width of sternum. Carapace quite straight (in profile) behind eyes. Patella and tibia iv. equal to length of carapace. Patella and tibia i. equal to length of carapace. Legs clothed with long hairs; feathery. Protarsus and tarsi i., ii., iii., and iv. broad, spatuliform. Habits arboreal; forming silken cylinders under bark of trees or amongst foliage.

Never having seen the type specimen of *M. plumipes*, C. K., one cannot speak with absolute confidence as to its generic characters. Specimens of *T. sancti-vincenti*, Walck., however, agree remarkably with the full figure of *M. plumipes* and in the arrangement of the eyes which C. Koch has given, and there can be little doubt but that the two forms are congeneric. As distinct from *Avicularia*, they may be recognized by the anterior eyes forming an almost straight row, whereas in *Avicularia* they form a strongly procurved line. In *Avicularia* the fourth pair of legs is the longest; in *Tapinauchenius* the first and fourth pairs are equal<sup>1</sup>. Tibia and patella iv. are, in *Avicularia*, longer than the carapace; in *Tapinauchenius* they are equal to it. The posterior pair of spinners in both these genera are longer than the width of the sternum. Otherwise in general characters the species of these two genera are very much alike; the anterior row of eyes, however, furnishing the best character—so far as one can judge from the material in hand.

*Mygale sancti-vincenti*, Walck., ♂, Insectes Aptères, i. p. 216. —Walckenaer says: “La quatrième et la première paire de pattes sont presque égales”—“les yeux forment un carré long, transverse, dont la gibbosité est peu prononcée.” The generic characters given above of *Tapinauchenius* have been drawn from specimens of this species.

Cf. E. Simon, Proc. Zool. Soc. 1891, p. 553. St. Vincent.

Species probably belonging to this genus hitherto described:—

*T. latipes*, Auss. Verhandlungen zool.-bot. Gesel. 1876, p. 183. Venezuela.

*T. reduncus*, Karsch, Zeit. ges. Naturwiss. p. 387, vol. liii. Costa Rica.

Of *Tapinauchenius*, M. Simon says:—“Les mœurs de ces

<sup>1</sup> M. Simon in Proc. Zool. Soc. 1891, p. 583, gives the lengths of the first and fourth pairs of legs in *T. sancti-vincenti* (♀) as i. 46.2 mm., iv. 48.5 mm. In this measurement the coxa is evidently not included; if the coxa is included, the lengths of i. and iv. are equal, namely, 59 mm. But of course there is no special value in the absolute lengths; nor must such characters be held as absolutely reliable. In an *Avicularia*, ♂, n. sp. undescribed, for instance, and in *A. rutilans*, Auss., ♂, again, the first pair of legs is equal to, or, if anything, slightly longer than, the fourth, instead of *vice versa*. Whether this character may ultimately prove to be more than of specific value or not, one would at any rate not regard it of sectional value as M. Simon does (Hist. Nat. Ar. i. p. 133). Many of these characters, however, must only be looked upon as generally true of this or that group and subject to particular exceptions—convenient as guides to classification, but to be used with great caution.

Araignées sont assez différentes de celles des *Avicularia*; tandis que ceux-ci sont assez lents, les *Tapinauchenius* courent avec une excessive rapidité.—“Je les ai trouvés sous des écorces d'arbres abattus dans les défrichements.”

This is very interesting, for the habit is evidently totally different from those of the genus *Santaremia* described below, and gives an additional warranty to the goodness of the generic distinction.

In certain Spiders from the Amazons and Trinidad, which resemble *Tapinauchenius* in the straightness of the anterior row of eyes, the first pair of legs is longer than the fourth, the sternal sigilla iii. and iv. are more removed from the margin, the legs of the iii. and iv. pairs are more slender than those of the first two pairs, and the legs are not clothed with long fringing hairs. On the ground of these differences I have formed a new genus for their reception, including two species, *Santaremia pococki* and *S. longipes*; *Tapinauchenius* will include *T. sancti-vincenti*; while *Avicularia* will include *A. avicularia*, *A. walckenaeria*, *A. rutilans*, &c.

The following characters may be found useful in distinguishing these three genera :—

A. Anterior row of eyes strongly procurved .....	<i>Avicularia</i> , Lam.
B. Anterior row of eyes straight or nearly so.	
1. First pair of legs equal to the fourth. Legs clothed with long hairs .....	<i>Tapinauchenius</i> , Ausc.
2. First pair of legs longer than the fourth. Legs clothed with short hairs .....	<i>Santaremia</i> , n. g.

#### SANTAREMIA, gen. nov.

*Anterior row of eyes straight or nearly so. Legs of first pair longer than those of fourth. Four pairs of sternal sigilla visible: 1st at base of labial plate; 2nd marginal; 3rd submarginal; 4th remote from margin. Posterior pair of spinners not longer than width of sternum. Carapace gibbous (in profile) behind the eyes. Patella and tibia iv. shorter than carapace. Patella and tibia i. equal to or longer than carapace. Legs clothed with short hairs. Protarsus and tarsi iii. and iv. much narrower, less spatuliform than i. and iii. Habits terrestrial, forming silk-lined burrows in the ground.*

Type. *SANTAREMIA POCOOCKI*<sup>1</sup>, n. sp., ♀.—*Hab.* Santarem. Type specimen in coll. Brit. Mus. Nat. Hist. 1896. (Plate XXXIII. figs. 8, 9, & 13; Plate XXXIV. fig. 20; and Plate XXXV. fig. 12.)

*Colour.* Carapace dark brown, clothed with short sandy yellow-grey hairs, rufous towards and on posterior margin. Base of mandibles clothed with sandy and much darker brown hairs. Abdomen rich chocolate-brown, with scattered rufous hairs, more numerous towards spinners. Ventral area brown. *Sternum*, coxæ

<sup>1</sup> I have great pleasure in connecting this species with the name of my friend Mr. R. I. Pocock of the Nat. Hist. Museum. He had already named it in MS. from specimens taken near Pará by Mr. Bates, but kindly withdrew his claim to the species in my favour.

of legs, and pedipalps rich brown. Underside of legs clothed with sandy yellow-brown hairs. Inner margin of coxa of pedipalp and outer margin of fang-groove fringed with fiery-red hairs. *Protarsi* and tarsi i. and ii. entirely,  $\frac{2}{3}$  of protarsus iii. and whole of tarsus,  $\frac{1}{3}$  of protarsus iv. and whole of tarsus, furnished with a dense pad of scopular hairs. *Tarsi* i., ii., iii., and iv. broad, spatuliform, but iv. much less so. Upperside of legs clothed with rich chocolate-brown hairs on femora, becoming more rufous along the four distal segments. Hair on legs short (not long, as in *Avicularia*). *Patella* of legs i. and ii. and pedipalp slashed with four narrow lines of short, pale, sandy-grey pubescence, central pair confluent towards apex of segment. *Tibiae* i. and ii. of pedipalp with two widely separate pairs of pale lines of pubescence; each pair very narrowly separate. *Protarsi* i. and ii. and of pedipalp with fine, short, central, pale basal line. *Legs* iii. and iv. exhibiting a somewhat similar but less conspicuous arrangement of pale lines. *Femora* of all four pairs with two faint dorsal and a pair of lateral yellow lines on the outer side, the latter obsolete on iv.

*Carapace* longer than broad, narrow, in proportion of 20 : 16, distinctly gibbous behind eye-tumulus. Central fovea deep, transverse, slightly procurved. *Eye-tumulus* twice as long as broad. Anterior row of eyes only a little procurved. *Fang-groove* armed with a single row of short conical teeth along outer margin, its floor towards base studded with minute granules. *Sternum* with four pairs of *sigilla* visible: 1st at base of labial plate, 2nd marginal, 3rd submarginal, 4th remote from margin.

*Labium* quadrate, a little longer than broad; distal third entirely studded with minute cuspules. Coxa of pedipalp almost twice as long as broad; inner distal angle slightly produced, obtusely conical; inner basal angle studded with minute cuspules; inner basal disc with a few more scattered cuspules. *Legs* of fourth pair shorter than those of first pair. *Patella* and *tibia* i. equal to length of carapace. *Tibia* and *patella* iv. shorter than carapace. *Tarsus* of pedipalp with *one*, of legs i., ii., iii., and iv. with *two* small stout hooked claws, their inner central edge armed with five minute denticles. *Spinning-mamillae* four; posterior pair trisegmental, second segment shortest; the whole three segments taken together not longer than width of sternum.

The habits of *Santarema pococki* are well known and have been for years. So long ago as 1879, Mr. Bates mentions the large spiders found near Pará, forming long silk-lined tubes in the sandy soil near Nazareth.

I was unable to secure any specimens from Pará myself, but met with abundance at Santarem and at several other places on the river, Monte Alegre.

At Santarem, their burrows, eighteen inches long, were most numerous along the banks of the waggon-track running across the sandy campos to the forest. Here at any time of day, though more especially at night, the females might be seen sitting at the entrance of the tube, which was trumpet-shaped and usually over-

hung by a tuft or two of hairy campos-grass or arched over behind with a few dry leaves, the first two pairs of legs, pedipalps, and mandibles alone visible; in colour closely similar to the surrounding sand. A footfall, or a shadow, and they would vanish. What their food may be I cannot say, for no débris was ever to be found in the burrow. Do they wait for it to come within reach, or do they go and seek it? I think the former. On several occasions, having sat up all night and now and again, at intervals of an hour, been the round of the burrows, each tenant was always found in exactly the same position; nor did I ever find one running about at night over the campos or in the forest. They may possibly, however, dash out a few feet and seize their prey when it passes, but I do not think they actually go in search of it.

What the males do with themselves I am utterly unable to say, for though I watched and searched and waited many times at night and dug out numerous burrows, yet on no occasion did I find a male within, nor find one, as I fully expected to do, running over the sand outside.

Females were taken in all stages of development, though it is quite possible I was too late for the male sex.

In spinning the trumpet-shaped mouth to the burrow, the Spider takes up a position with the abdomen and hind legs only appearing from the burrows, and then by rubbing the spinners backwards and forwards covers the ground round the entrance with fine white silk. The large white cocoon, formed of a loose bag of silk, containing from 80-100 eggs, lies loose in the slightly enlarged end of the burrow. When the young are first hatched, they nourish themselves on the moist envelopes of the eggs, whence they have just emerged. Later they may be found crowding the entrance of the den or below with their mother.

Contrary to one's expectation, the temperament of these spiders appears to be gentle; though raising themselves on the hind legs and striking with the mandibles when irritated, yet there is no inclination to initiate an attack. Neither in confinement, though starving for want of food, since they would eat neither worms, caterpillars, crickets, cockroaches, moths, nor millipedes, did they show any inclination to attack each other nor the young spiders which were with them. Water they drank eagerly enough.

Nothing could be externally more unlike than the Spiders I have included in this genus and those usually included in the genera *Avicularia* and *Tapinauchenius*. The latter are much more hairy and the first pair of legs are equal to or less than the fourth pair. In the former the legs are not clothed with long hairs, and the first pair are longer than the fourth. The coxæ, femora, and patella, too, of the first two pairs of legs are very stout, while those of the third and fourth pairs are more slender, especially the fourth. In *Avicularia* and *Tapinauchenius* the tarsi and pro-tarsi of all four pairs are broad and spatuliform; in *Santaremia* those of the third pair are much less so than those of the first

two pairs, while those of the fourth pair are even less so than the third. I should expect to find, too, that no species with characters agreeing with those of *Santaremia* would be found with an arboreal mode of life. The habit of burrowing in the earth has undoubtedly been a factor in the differentiation of various genera and of this genus also, though one must not speak too confidently in the absence of data. The feathery legs and broad spatuliform terminal joints on all four pairs of legs in *Avicularia* and *Tapin-auchenius* are obviously the outcome of an arboreal habit<sup>1</sup>.

#### Genus HARPALOTHELE, Lenz.

Under the generic name *Harpalothele*, M. Simon, in Hist. Nat. Ar. 1892, pp. 180, 181, distinguishes three groups corresponding to three different geographical areas. The first are those from Oceania, which will fall under the genus *Ixamadus*, Sim., with *I. varia*, L. K., as the type. The second are the African species, which fall under the genus *Harpalothele*, Lenz., with *H. reuteri*, Lenz, as the type. The third are the more numerous species from the Neotropical regions, which fall under the genus *Fufius*, Sim., with *F. atramentarius* as the type.

The last generic name I have retained in this paper for convenience sake, and have added a brief reference to the other species of the group which have been already described from South America.

#### Genus HARPALOTHELE, Lenz.

Type. *H. reuteri*, Lenz, Zool. Jahrbücher, i. p. 397 (1886).  
Hab. Madagascar.

#### Genus IXALUS, L. Koch.

Type. *I. varius*, L. K. (♂ ♀; ♂ 14 mm., ♀ 15 mm.), Ar. Austral. 1873, p. 469. Hab. Oceania.

The name *Ixulus*, however, being preoccupied, Simon has renamed the genus *Ixamadus*.

#### Genus IXAMADUS, E. Sim.<sup>2</sup>

Type. *I. varius* (L. K.), E. Sim. Bull. Soc. Zool. Fr. 1887, note, ♂ ♀. Hab. Port Bowen, Australia.

<sup>1</sup> *S. longipes*, n. sp., ♀. Hab. Trinidad. Type specimen in coll. Brit. Mus. Nat. Hist. 1896.

*Colour.* Carapace mahogany-brown, clothed with sandy-yellow hairs. Mandibles clothed with short sandy yellow hairs (no long ones as in *pococki*). Abdomen clothed with sandy yellow-grey hairs. Ooxæ of i., ii., iii., and iv., femora of i. and ii. deep chocolate-brown underneath; the latter clothed above and on sides with sandy-yellow hairs. Underside of tibiæ i. and ii. clothed with sandy-yellow hairs, glossy. Patellæ and tibiae of legs without longitudinal stripes. Patella and tibia i. longer than carapace (25 mm.—21 mm.). Habits unknown. Carapace 21 × 18 mm.

<sup>2</sup> In Hist. Nat. Ar. 1892, p. 180, the name has been misprinted *Ixamatus*.

## Genus FUFIVUS, E. Simon, 1888.

Type. *F. atramentarius*, E. Sim. (♀), Ann. Soc. Ent. Fr. 1888, p. 213. 17 mm. long. *Hab.* Guatemala.

FUFIVUS AURICOMIS, E. Sim. (Plate XXXV. figs. 4, 6, 8, 16.)

♂ ♀. *Hab.* Santarem, Lower Amazons. ♂ 12.5 mm. long.; ♀ 17 mm. long. In coll. Brit. Mus. Nat. Hist. ♂ new.

♂.—*Colour.* Carapace and basal joint of mandibles black, clothed with fine golden hair. Sternum, coxæ of pedipalp and of first pair of legs deep pitch-brown. Femora black, apex tinged with pink; patella pitch-brown; tibia of legs black, of pedipalp pitch-brown; protarsi and tarsi slightly paler; 2nd, 3rd, and 4th pair of legs pitch-brown, paler towards extremity. Tibiæ and protarsi each with two dark annulations, one at the apex, the other at or towards the base. Coxæ and trochanter of pedipalpi and all four pairs of legs clothed above with golden hairs. *Abdomen* pitch-brown, with a central, dorsal band of fine golden hairs, more scattered laterally towards apex. Ventral area brown; spinners paler, second and third joints suffused with dark brown.

*Carapace* longer than broad, finely granulate; cephalic area occupying over half the length of carapace; central fovea deep, recurved. Cephalic and thoracic impressions well marked.

*Ocular tumulus* low, height double its breadth. Central anterior eyes large, circular, half a diameter from margin of clypeus, half a diameter apart, almost in contact with anterior laterals; less than a quarter diameter from posterior centrals. Anterior laterals reniform elliptic; their axis rather less than diameter of anterior centrals. Posterior laterals ellipsoid, their axis equal to half the axis of anterior laterals and one quarter their axis from them. Posterior centrals very small, their axis equal to one third the diameter of the anterior centrals, ellipsoidal, less than half an axis from lateral posteriors, almost two diameters of anterior centrals apart.

*Sternum* longer than broad, finely granulate and sparsely tuberculate, with a longitudinal smooth central channel; its width one third less than its length; posterior margin fringed with stiff separate dark hairs. Sigilla well marked, especially 1st, 2nd, 3rd, and 4th pairs; 2nd and 3rd marginal.

*Mandibles* without rastellum. Inner margin of fang-groove armed with a single row of eight conical teeth, its floor studded towards the base with minute cusps; outer margin fringed with rufous hairs, inner with a few fine hairs.

*Labium* longer than broad, attenuate towards apex, with two or three minute cusps. Coxa of pedipalp twice as long as broad, finely granulate and sparsely tuberculate, studded with numerous minute cusps at base, clustered towards inner angle. Inner apical angle slightly produced and studded with minute cusps. Inner margin thickly fringed with rufous hairs. Tibia of pedipalp incrassate, fringed with long hairs; tarsus short, dilate,

clothed with hairs. Bulb short, pyriform; stylus slender, sinuous. The whole length of bulb and stylus one-eighth less than that of tibia.

*Legs* i., iv., ii., iii. Coxa, trochanter, and femur finely granulate; the latter without spines below, two or three above. Patella i. with six or eight spines beneath; tibia i. with two series of 5—5 beneath, and two or three spines on either side; bearing at its apex beneath a stout, sharp, conical spur, directed forwards and outwards, *not bifid*. Protarsus furnished with two spines beneath and a pair at the apex; strongly curved at base, the apical angle of curved portion bearing a short, very stout, conical spur. Tarsi i., ii., iii., iv., furnished on underside with scopuliform hairs; protarsi i. and ii. slightly so on either side at apex; iii. and iv. not scopulate. Tibiæ and protarsi ii., iii., and iv. spinose beneath; tibia iii. with one or two spines also on the upperside.

*Tarsal claws* i., ii., iii., iv. three-clawed; superiors with a double row of 6—8 denticles.

*Spinners* four; posteriors three-jointed, one fourth the length of abdomen. Basal joint longer than the middle, equal in length to the terminal. Anterior spinners half the length of the basal joint, twice their diameter apart at base.

*Comparative measurements in millimetres.*—♂. Carap. 6.5 long., 5.5 lat. Abd. 6 long., 3.5 lat. Cephal. area 4 long. Sternum 3.5 long., 2.5 lat. Coxa of pedipalp 2.5 long., 1.25 lat. Pedes, long. i. 23—ii. 20—iii. 17—iv. 22. Artl. i. long. 3—1—5—3 4—4.25—2.5. Artl. iv. long. 2—1—5.5—2—4.5—4.5—2. Post. mam. 3.5 long. Artl. 1.25—1—1—1.25. Antr. mam. .75 long., 1 apart at base. Mandib. 3 long. Large male 13 long.; small male 10 long.

♀.—*Colour.* Carapace and base of mandibles dark pitch-brown; the former clothed with converging lines of golden hairs; base of latter with a dorsal band, and two narrow, external, lateral bands of fine golden hairs, and a few interspersed amongst the intervening black hairs. *Abdomen* clothed with a dense coat of deep chocolate-brown hairs, having also a dorsal clothing of golden hairs, extending to and spreading laterally towards the spinners, Ventral surface rich chocolate-brown.

*Carapace* longer than broad; central fovea deep, recurved; cephalic area rather more than half the length of carapace. *Abdomen* longer than carapace. *Spinners*: posterior pair a little over one third as long as abdomen; basal joint longest; apical half as long again as middle joint. Anterior pair half the length of basal joint of posterior pair, twice their diameter apart.

*Ocular tumulus* twice as long as broad. Central eyes largest, proportionally the same as in the male, but further apart. Anterior centrals nearly half a diameter from posterior centrals; same distance from anterior laterals. Posterior centrals and laterals almost in contact; the latter nearly their axis distant from anterior laterals. Anterior centrals circular, the rest ellipsoidal.

*Mandibles* scarcely as long as cephalic area. Fang-groove with

a row of eight stout conical teeth on inner margin. Floor of groove studded towards base with minute cusps.

*Sternum* longer than broad, finely granulate and sparsely tuberculate, with a longitudinal, central, smooth channel. Posterior margin fringed with stiff, separate, black hairs. Sigilla i., ii., iii., iv. well marked; iii. and iv. submarginal. Labial impressions very deep.

*Labium* longer than broad, narrower towards apex, armed with five or six cusps; its base much depressed.

*Coxa of pedipalp* longer than broad, slightly produced and obtusely rounded at inner apical angle, the latter being studded with minute cusps. Pedipalp dark pitch-brown.

*Legs* dark pitch-brown; i. and ii. the darkest. Femora blotched beneath and also slightly above with black; patella suffused with black at apex; tibiae and protarsi with a dark annulus at apex and towards or at base. Upperside and apex of coxa, femur, tibia, and, slightly so, the tarsus enriched with scattered golden hairs. Tarsus of pedipalp, tarsus and two-thirds of protarsi i. and ii. densely scopulate; of iii. and iv. not scopulate. Femora of pedipalp and legs without spines. Tibiae i. and ii. with 3-3 setiform hairs beneath; iii. and iv. with 3-3 spines and a single spine. Protarsus iii., alone, with spines above. Protarsus of pedipalp armed beneath with numerous spines; protarsi of leg i. with 5 spines; of ii. with two series of 3-3 spines, besides isolated ones; of iii. and iv. with numerous spines. Tarsi of pedipalp with two spines, of legs without any spines. Tarsus i. with 3 claws; superiors armed with a double series of 6-6 denticles beneath. Tarsus ii. with 3 claws; superiors with a double series of 6-6 denticles. Tarsus iii. with 3 claws; superiors with a single row of 3 denticles. Tarsus iv. with 3 claws; superiors with single row of 6 denticles.

*Spinners* four; posterior pair shorter than abdomen, appearing four-jointed from above, on account of pseudo-joint; basal joint longest, central shortest, terminal longer than the latter. Anterior pair half the length of basal joint of posterior pair; twice their diameter apart.

*Comparative measurements in millimetres.*—♀. Carap. 8 long., 6 lat. Abd. 9 long., 6 lat. Cephal. area 5 long. Stern. 4.25 long., 3.5 lat. Coxa of pedipalp 3 long., 2 lat. Pedes, long. i. 23—ii. 21—iii. 19—iv. 23. Artl. i. long. 4—1.5—5—3—3.5—3.5—2. Artl. iv. long. 2.5—1.25—5—2.5—4.25—4—2. Postr. mam. 5 long. Artl. 1.75—1—1.5. Antr. mam. 1 apart. Mandib. 4 long.

*Immature ♀.*—Similar in character and coloration to the adult, but pale yellow-brown on carapace, sternum, and mandibles. Legs orange, ornamented with black annuli and blotches. Femora with a submedian and an apical interrupted annulus. Base and apex of patella, tibia and protarsus of all four pairs ornamented with entire, or interrupted, annuli. Central blotch



on femur iv. almost obsolete. Pedipalp variegated similarly to the legs.

Two males and three females of this handsome Spider were taken on the Lower Amazons, at Gurupá and in the forest of Santarem. They are found under loose pieces of bark; but whether they construct any kind of nest I am unable to say. The immature specimens are much more brightly coloured than the adult. The male of this species was hitherto unknown. A female too was taken by Mr. Piffard near Manãos.

There are four species from the New World, described under the names *Harpalothele* and *Fufius*, which would fall under the latter name should the distinction made in this paper be a permanent one.

*Fufius atramentarius* Sim. (♀, 17 mm. long), Ann. Soc. Ent. Fr. 1888, p. 213. Certainly not identical with the above, as shown by the following extract:—"Cephalothorax nigerrimus, opacus, fere glaber." "Medii postici anticis plus quadruplo minores." "Mamillæ ferrugineæ." "Pedesque nigri, sed patellis dilutioribus et rufescentibus." *Hab.* Guatemala.

*Harpalothele lanicia* Sim. (♀, 22 mm. long), Ann. Soc. Ent. Fr. 1892, p. 283. "Mamillæ atræ." "Sternum, coxæ, et partes oris nigræ." "Pedes fusco-rufescentes, flavido-pubescentes, et nigro-hirsuti." *Hab.* Bolivia; Espiritu Santo.

The legs are not annulate as in *H. auricomis*.

*Harpalothele garleppi*, Sim. (♀, 25 mm. long), Ann. Soc. Ent. Fr. 1892, p. 284. "Mamillæ fuscæ." "Pars labialis mutica, paulo latior quam longior." No mention is made of the very characteristic colouring of the legs evident in *H. auricomis*. *Hab.* Bolivia.

*Harpalothele albovittata*, Sim. (♂), Ann. Soc. Ent. Fr. 1891, p. 306.

8 mm. long. *Hab.* Manãos, Lower Amazons.

"Cephalothorax niger, opacus, pilis longis pallide fulvo-nitidis parce vestitus. Abdomen nigrum, linea media integra albo-argenteo-pilosa decoratum. Chelæ nigræ supra ad basin vitta albo-pilosa ornata. Pars labialis mutica."

"Tibia 1<sup>a</sup> paris incrassata, ovata, inferne biseriatis aculeata (aculeis 3—3, interioribus longioribus) et extus ad apicem calcare vallido, apice inæqualiter bifido, armata. Metatarso gracili, ad basin curvato, et inferne, in parte basali, tuberculis binis geminatis insigniter instructo. Bulbo simplici, longe attenuato, aculeo gracillimo brevi et curvato ad apicem munito. Mamillæ nigræ, articulo apicali testaceo."

*Harpalothele auricomis*, Sim. (♀) Ann. Soc. Ent. Fr. 1891, p. 305.

*Hab.* Pará, Brazil.

"Cephalothorax obscure fuscus, pilis longis, nitidis, subaureis vestitus." "Pedes breves, pallide fulvi, nigro-maculati et annu-

lati." "Tibiæ quatuor anticæ inferne aculeis setiformibus 3—3, metatarsi aculeis validioribus 3—3 instructi, pedes postici numerose aculeati." "Mamillæ fusco annulata." "Long. ceph. + abd. 13.5 mm."

There is very little doubt, short of actual comparison of types, as to the identity of *H. auricomis*, Sim., with my female adult specimen from Santarem and with the immature females from Gurupá. The males have not hitherto been described, but the two obtained on the Lower Amazons undoubtedly belong to the females taken at the same time.

#### Genus *DIPLURA*, C. Koch; E. Sim.

Type. *Mygale macrura*, C. K. (♂, 6.5 mm. long), Die Arachniden, ix. p. 38, tab. ccc. fig. 715 (1842). Hab. San Juan, West Indies. In coll. Impr. Mus. Berlin.

The genus *Diplura* was founded in 1850, 'Uebersicht des Arachn.', C. L. Koch, p. 75. The author says of the type, *D. macrura*, "*Sehr gerade ausstehende Spinnwarzen*," and in his description of the same spider under *Mygale* he says "Kopf und Thorax rostgelb"—"Der Hinterleib sammt den Spinnwarzen braunschwarz."

The figure on plate ccc. seems to suggest that this species is closely allied to that described below as *D. sanguinea*, but the unicolorous abdomen would prove it to be certainly a different species. Not having seen the type of the genus, which apparently is still extant in Berlin, and feeling pretty sure that it will prove not congeneric with the three species described below, I have considered it less liable to lead to confusion in the future to form two new genera for their reception. Two of them, *Melodeus sanguineus* and *M. niger*, might possibly fall under Simon's group A, while the third, *Harmonicon rufescens*, would fall under group B (cf. Hist. Nat. Ar. i. p. 178, 1892). It, however, group A really corresponds, as M. Simon suggests, to Bertkau's genus *Thalerothele*, then mine will not fall into the group, for of *Th. fasciata*, Bert., the type of the genus, Bertkau says "scopula nulla"; whereas all these three species possess very distinct scopulae on the tarsi of all four pairs of legs. It is just possible, however, that Bertkau's type may be immature, in that case the scopula would probably not be developed; but of this I cannot speak with certainty.

*Trechonu*<sup>1</sup> is undoubtedly a good genus, the tarsi and protarsi

#### <sup>1</sup> Genus *TRECHONA*, O. Koch.

Type. *Trechona zebtrata* (Walck.), 1835, sub *Mygale* (♀). In coll. Brit. Mus. Nat. Hist. 1896.

Anterior eyes almost equal, forming a slightly curved line, almost straight. Oarapace a little raised behind the eye-tumulus. Posterior spinners one-half shorter than abdomen; segments subequal. Legs long, robust; protarsi and tarsi i. and ii. entirely and densely scopulate, the former with three or four long spines lying amongst the scopulae; the latter without any central series of long setae amidst the scopulae. Protarsus iii. with distal two-thirds, tarsus iii. entirely, densely scopulate. Protarsus iv. with distal half and entire tarsus iv.

of the type female being furnished with a dense scopula. The lyra also differs considerably in character from those of the three species here described.

Besides these forms of *Diplurina*, of which the females (and doubtless the males as well) possess the lyra and pecten, there are before me others which, being otherwise closely allied, possess no lyra or pecten.

A male adult and a female, apparently immature, from Peru, present characters which, in conjunction with the absence of stridulating-organs would seem to warrant the formation of another genus for their reception. Whether these will eventually prove to be congeneric with *Diplura macrura* (C. K.) I cannot say, but should not be surprised if such were the case.

For the present I form a genus *Neodiplura*<sup>1</sup> for the reception of those which possess no stridulating-organs. Of *D. cousini*, ♀, Sim., of which the labium is spinulose; *D. aequatorialis*, Auss., ♀, closely allied to *D. cousini* (sec. Simon); *D. longicauda*, Auss., ♀, with spinners longer than the abdomen; and *D. rogenhoferi*, Auss., ♀, I cannot speak with any certainty. The characters given would apply fairly well, from a generic point of view, to any of the Dipluriform spiders.

#### HARMONICON, gen. nov.

*Posterior spinning-mamille as long as abdomen; terminal segment the longest. Legs longer, more slender. Fang-groove with a single*

more lightly scopulate. First pair of legs a little longer than fourth. Tarsal claws 3. Superiors armed with a double series of denticles. Fang-groove armed on the outer side with a single row of teeth; floor of groove towards base studded with cuspules. Coxa of pedipalp furnished on inner side with 17 long claviform spines and a thick pad of numberless smaller spines, interspersed with claviforms. Base of mandible furnished with seven or eight stout spiniform hairs, incrassate at base, the first five isolated. These form the lyra and pecten of the stridulating-organs.

#### <sup>1</sup> NEODIPLURA, gen. nov.

No lyra or pecten on coxa of pedipalp and base of mandibles respectively. Tarsi and protarsi i. and ii. fairly densely and entirely scopulate; the former with no central series of setæ; the latter with spines amidst the scopula. Tarsi iii. and iv. densely and entirely, protarsi iii. and iv. slightly and towards apex, scopulate. Tarsal claws 3; superiors armed with a double series of denticles.

*NEODIPLURA JELSKII*, n. sp. (♂ ♀). *Hab.* Peru. Type ♂ coll. W. Kulezyski, Cracow. (Plate XXXV. figs. 5, 10, 11, 14.)

*Colour.* Carapace mahogany-brown, clothed with short silky yellow pubescence; abdomen brown, clothed with long silky yellow hairs, with a double dorsal series of 5 or 6 short, transversa, dull orange bars. Sternum and legs brown, with short silky yellow hairs.

*Carapace* a little longer than broad, flat, slightly raised behind eye-tumulus, with a shallow depression on either side and a recurved groove behind eyes. Central fovea small and recurved. Eye-tumulus prominent, diameter of anterior centrals larger than the axis of laterals; less than one diameter apart; less than half from laterals. Anterior row almost straight, slightly procurved. Posterior centrals smaller than posterior laterals, and almost in contact with

row of teeth on the outer margin and a row of fine capsules in centre of fang-groove. Tarsi i. and ii. distinctly scopulate, with central series of long setæ. Coxa of pedipalp furnished with a lyra formed of 5 long, curved, claviform spines. Base of mandible with 4 isolated, incrassate bristles at the base. Diameter of anterior central eyes distinctly less than axis of laterals.

HARMONICON RUFESCENS, n. sp. (Plate XXXIII. figs. 3 & 6, and Plate XXXV. figs. 2 & 3.)

♀. 27 mm. long. Type in coll. Brit. Mus. Nat. Hist. Hab. Santarem, Lower Amazons.

♀.—Colour. Carapace dull orange, almost destitute of hairs and pubescence. Abdomen rufous, clothed with fine black hairs, more numerous in front; spinners rufous. Sternum and legs dull yellowish with brown shading, clothed with spines and short black hairs. Mandibles dull orange, clothed with black hairs.

Carapace longer than broad. Cephalic area two-thirds the length of carapace. Central fovea only slightly recurved. Thoracic striæ well-marked. Ocular tumulus slightly raised above the level of the carapace, three times as long transversely as wide. Anterior centrals circular, three-fourths of a diameter apart, less

them. Sternum longer than broad. Sigilla well-marked: 1st pair very large at base of labial plate; 2nd submarginal; 3rd remote; 4th more remote; each opposite the coxa of one pair of legs. Labium broader than long, semicircular; apex not spinulose. Coxa of pedipalp twice its breadth, anterior distal angle not produced, anterior basal angle studded with numerous cuspules. Legs long, 4, 1, 2, 3. Tibiæ and protarsi i. and ii. spinose beneath; iii. and iv. above and below. Tibia i. with a stout spur-like spine on outer side at apex; protarsus i. with a stout tubercle on outer side towards the base. Tarsi slender, flexuose, much curved; protarsus i. thickly recurved. Tarsal claws 3; superiores armed with a double series of denticles. Posterior spinners shorter than abdomen, trisegmental, segments subequal. Anterior spinners within two diameters of each other. Pedipalp: tibia with long spines beneath, tarsus very short, bulb short piriform, its apex prolonged into a short, stout, simple, slightly curving spine, directed outwards and backwards. Fang-groove with a single row of teeth on the outer margin.

♂.—Carapace 11 mm. long, 9·5 broad. Abdomen 12·5 mm. long. Mandibles 5 mm. long. Post. spinners 9 mm. long. Legs, i. 55 mm.; ii. 50 mm.; iii. 45 mm.; iv. 53 mm.

♀ (immature).—Colours and general characters the same as of the ♂. Diameter of anterior central eyes less than axis of laterals, thus differing from the male, the difference being possibly due to immaturity.

These specimens were kindly submitted to me by my friend Prof. Kulczynski, of Oracow. They were taken by Dr. Constantine Jelski in Peru.

- A. Coxa of pedipalp and base of mandible with stridulating-organs.
1. Tarsal scopula without central series of long setæ ... *Trechona*, O. K.
  2. Tarsal scopula with central series of long setæ.
    - a. Legs long, slender. Terminal segment of posterior pair of spinners longer than either of the basals. *Harmonicon*, n. g.
    - b. Legs short, stout. All three segments of posterior pair of spinners subequal..... *Melodeus*, n. g.
- B. Coxa of pedipalp and base of mandible without stridulating-organs ..... *Neodiplura*, n. g.

than half a diameter from anterior laterals. Anterior laterals ellipsoidal, their axes one-half longer than diameter of anterior centrals. Posterior centrals smallest, oval, less than their transverse diameter from anterior centrals, only one-half the transverse diameter from posterior laterals. Posterior laterals ellipsoidal, their axes almost equal to diameter of anterior centrals; less than half their transverse diameter from anterior laterals. Anterior row procurved.

*Mandibles* parallel-sided; fang-groove armed on inner side with a series of 12 stout conical teeth; floor studded with a single distinct row of 12 small cusps, diminishing in size towards the base, where are also numerous irregular small cusps. Outer margin fringed with thickly-set rufous hairs, four at the base being stouter and separate.

*Sternum* a little longer than broad, smooth, set with black separate hairs; sigilla distinct, submarginal. *Labium* broader than long, convex, smooth, not studded with cusps; set with long black bristles. *Coxa of pedipalp* twice as long as broad, its basal anterior angle studded with a central longitudinal area of small black cusps. Anterior apical angle very slightly produced, smooth. Tarsus not scopulate; tarsal claw furnished with 6 denticles on the basal half beneath. *Coxa of pedipalp* furnished on the inner side, on the basal portion of the central ridge, with the "lyra," consisting of 5 stout curved spines; three curving hairs towards the anterior portion, and one small bristle towards the posterior portion of the ridge. These 5 spines strike on the four stout, separate, isolated bristles above mentioned as situated on the mandible, which together form the "pecten." These two structures, the "lyra" and the "pecten," together constitute the stridulating-organ.

*Legs* long and slender. Femora i. and ii. without spines; iii. with a few spiniform bristles; fourth pair of legs absent. Patella i., ii., & iii. without spines. Tibiæ i. & ii. with one or two spines beneath; iii. with a double row of 3-3 on either side. Pro-tarsi i. and ii. with 5 and 6 spines respectively beneath; iii. with numerous spines. (N.B. The number of spines on the legs is not constant.) *Tarsi* with three claws, superior pair armed beneath with a double series of 5-6 denticles. Inferior claw long. Tarsi i. and ii. scopulate.

*Abdomen* long-narrow. Spinners four. Posterior pair as long as abdomen, three-jointed; basal equal in length to the second joint; terminal joint longer than the second. Anterior pair half as long as the basal joint of posterior pair, nearly the full length of one of them apart.

*Comparative measurements in millimetres.*—♀. Carap. 10 long., 8 lat. Abd. 17 long., 9 lat. Ceph. area 6.5 long. Stern. 5 long., 4 lat. Coxa of pedipalp 3.5 long., 2 lat. Pedes, long. i. 42—ii. 38—iii. 38—iv. abest. Artl. i., long. 4.8—2—9.5—3.75—8—7.75—5. Artl. iv. long.: abest. Post. mam. 17 long. Artl. 5—5—7 long. Antr. mam. 2.8 long., 2 sept. Mandib. 5 long.

A single example of this fine Theraphosid, of the female sex, was taken in a huge web of the "Agelenoid" type in the damp low-lying portion of the forest near Santarem. Many more of the webs were seen, but the tube is spun so far down amongst the roots of the trees that it is next to impossible to secure specimens, for they retire with lightning speed on the smallest sign of danger.

#### MELODEUS, gen. nov.

*Posterior spinning-manillæ as long as or shorter than abdomen; segments equal in length. Legs shorter, stout, especially the femora. Fang-groove with a single row of teeth on outer margin and numerous cuspsules towards base. Tarsi i. and ii. distinctly scopulate<sup>1</sup>, with central series of long setæ. Cova of pedipalp furnished with from 7-10 curved claviform spines. Base of mandible with 3 or 4 isolated bristles incrassate at the base. Diameter of anterior central eyes equal to or scarcely less than axis of anterior laterals.*

MELODEUS SANGUINEUS, n. sp. (Plate XXXIII. figs. 1, 4, 7, and Plate XXXV. fig. 1.)

♀. 24 mm. long. Type in coll. Brit. Mus. Nat. Hist. Hab. Santarem, Lower Amazons.

♀.—*Colour.* Carapace bright orange-red, clothed with short, silky, rufous hairs. Abdomen black, clothed with dense pubescence, furnished with erect black hairs, having on either side two separate longitudinal bands of fine transverse obliquely dull orange blotches, interrupted towards the ventral surface. Ventral area clothed with mouse-grey pubescence. Legs short, stout, yellow-brown, darker towards their extremities, clothed with fine black hairs and rufous pubescence. Sternum and mandibles deep brown, the latter darker at apex, both clothed with black hairs.

*Carapace* a little longer than broad; cephalic area not quite three-quarters the length of carapace. Central fovea deep, re-curved; thoracic striæ well marked. *Ocular tumulus* slightly raised above the level of the carapace; three times as long as its width. Anterior centrals large, circular, half a radius apart, rather less from the anterior laterals. Anterior laterals ellipsoidal, their axis equal to the diameter of anterior centrals. Posterior centrals smallest, oval, half their diameter from anterior centrals, almost in contact with posterior laterals. Posterior laterals ellipsoidal, their axis less than that of anterior laterals, almost in contact with the latter; anterior row almost straight. (N.B. The eyes vary in different specimens.)

*Mandibles* parallel-sided, slightly enlarged towards apex. Fang-groove armed on inner side with 11 stout conical teeth; its floor studded towards the base with numerous minute cusps. Outer margin fringed with rufous hairs, of which 8 towards the base are isolated, separate and thickened towards their base.

*Sternum* longer than broad, set with black hairs, each springing

<sup>1</sup> In immature examples the scopula is entirely absent.

from a small tubercle, and with rufous pubescence. Sigilla present, submarginal. *Labium* broader than long, clothed with hairs, not cuspidate. *Coxa of pedipalp* twice as long as broad; anterior basal angle studded with a central band of minute cusps; anterior apical angle slightly produced, not cuspidate: on its inner side, about the middle, towards the inner basal angle, is situated a series of 10 stout clavate spines, whose free ends play across the stout separate hairs on the base of the mandible; these together constitute the "lyra" and "pecten" of the stridulating-organ.

*Legs* short and stout. Femora not spinose; patellæ i., ii., and iv. not spinose, iii. with one or two spines. Tibiæ i. and ii. with three spines on inner side towards apex, which is scopulate; iii. and iv. with a few spines on either side. Protarsi i. and ii. armed beneath with 5 and 6 or 7 spines respectively; of iii. and iv. also spinose. Tarsi i. and ii. short, slightly curved, transversely striate above, clothed with a scopula; iii. and iv. not scopulate. *Tarsal claws* 3; superior pair armed beneath with a double series of 6-7 denticles. Tarsal claw of pedipalp with a single row of 5-6 denticles.

*Abdomen* shorter and broader than in *M. rufescens*. Mamillæ four: posterior pair shorter than abdomen; basal joint the longest, second and third equal: anterior pair a little over half the length of the basal joint of the posterior pair, almost as wide apart as their length.

*Comparative measurements in millimetres.*—♀. Carap. 11 long., 10 lat. Abd. 13 long., 9 lat. Cephal. area 7 long. Stern. 6 long., 4 lat. *Coxa of pedipalp* 4.5 long., 2.5 lat. Pedes, long. i. 35—ii. 33—iii. 31—iv. 38. Artl. i. long. 5—2.5—8—5—6—6—3.5. Artl. iv. long. 4.5—2.5—8.5—4—7—8.5—4. Postr. mam. 11 long. Artl. 4.—3.5—3.5. Mandib. 5.5 long. Antr. mam. 2.5 long., 2 sept.

Numerous specimens of the female sex of this handsome species were taken at night as they sat in the entrance of the tube of their large "Agelenoid" webs in the forest near Santarem. Many were also taken under logs of wood, where the web and tube assume the character of those of the genus *Celotes* in Europe.

*MELODEUS NIGER*, n. sp. (Plate XXXIII. figs. 2, 5.)

♀. 20 mm. long. Type in coll. Brit. Mus. Nat. Hist. *Hab.* Santarem, Lower Amazons.

♀.—*Colour.* Carapace sepia-brown, clothed with silky rufous pubescence. Abdomen deep brown, clothed with grey hairs; having on the dorsal area a double series of 5 obliquely transverse rufous bars, the last three often interrupted at their extremities; breaking up into irregular spots towards the spinners. Legs, sternum, and labium deep brown, clothed with black hairs and dark grey pubescence. Mandibles black, clothed above with rufous pubescence.

*Carapace* longer than broad; cephalic area more than half the length of the carapace. Central fovea deeply recurved;

thoracic striæ well marked. *Ocular tumulus* three times as long as wide. Anterior central eyes less than a radius apart, and from the anterior laterals their diameter distinctly less than the axis of the anterior laterals. Posterior centrals the smallest, pyriform, half their axis from anterior centrals, in contact with posterior laterals. Axis of posterior laterals more than half as long as that of anterior laterals, less than half their short diameter from them<sup>1</sup>. Anterior row straight.

*Mandibles* parallel-sided. Fang-groove armed on the inner margin with a row of 12 stout conical teeth (the number varies). Outer margin fringed with rufous hairs, bearing towards their base 6 separate isolated hairs, thickened towards their base.

*Sternum* longer than broad. *Sigilla* i., ii., iii., iv. well marked, submarginal. *Labium* broader than long, not cuspidate. *Coxa of pedipalp* twice as long as wide. Anterior basal angle cuspidate (as in *M. rufescens* and *M. sanguineus*). Anterior apical angle slightly produced, not cuspidate. Inner side of joint bearing towards the base a series of 7 stout, curved spines, and one smaller one on the central ridge; these, together with the thickened hairs on the base of the mandible, constitute the "lyra" and "pecten" of the stridulating-organ.

*Legs* similar in general character to those of *M. sanguineus*. Femora not spinose. Patella i., ii., iii., iv. not spinose. Tibiæ i. and ii. with a few spines beneath; iii. and iv. with a few spines at the sides and spiniform hairs below. Protarsi i. and ii. with 3-4 spines respectively beneath; on iii. and iv. more numerous. Tarsi short, slightly curved, transversely striate above; i. and ii. scopulate; iii. and iv. not scopulate. Tarsal claws 3; superior pair with a double series of 6-7 denticles beneath. Tarsus of pedipalp with a single claw, armed beneath with a single row of 5 or 6 denticles.

*Abdomen* similar in general character to that of *M. sanguineus*. *Mumille* four: posterior pair a little longer than abdomen; all three joints equal in length; anterior pair half as long as the basal joint of the superior pair, less than the length of one of them apart.

*Comparative measurements in millimetres.*—♀. Carap. 9 long., 8 lat. Abd. 11 long., 6.5 lat. Cephal. area 5.5 long. Stern. 4.5 long., 3.5 lat. Coxa of pedipalp 3 long., 2 lat. Pedes, long. i. 30—ii. 29—iii. 27—iv. 34. Artl. i. long. 4.25—2—7.5—3.25—5.5—5.5—3. Artl. iv. long. 3.5—1.75—8—3—6—8—4. Postr. mam. 12 long. Artl. 4—4—4. Antr. mam. 2 long., 1.5 sept.

Many examples of the female sex only were obtained under logs in the forest near Santarem. The web is of the "Agelenoid" type, and is often constructed under banks along the bridle-tracks, assuming

<sup>1</sup> The measurements of the eyes are very untrustworthy, for they vary with almost every specimen. One female before me has the right anterior lateral eye entirely obsolete, while the area where it would normally be placed shows no trace of the organ. The right posterior lateral has at the same time an axis longer than the diameter of the anterior centrals.



in these situations the appearance of the webs of *Tegenaria*. No males were met with, and the greater part of the specimens obtained were immature.

The following species of this group have been described from South America, but none of them appear to be identical with those which I have met with on the Amazons:—

*Thalerothele fasciata*, Bertk. (♀, 14 mm. long), Verzeichniss der Brasil. Arach. p. 24, 1830, fig. 2. *Hab.* Rio Janeiro; Venezuela and Colombia.—Of this species Bertkau remarks, “*scopula nulla* :” while *M. sanguineus*, *M. viger*, and *Harmonica rufescens* possess the scopula. This species also exhibits abdominal markings, so that it cannot be identical with *H. rufescens*.

*Diplura soricina*, E. Sim. (♀, ceph. 9 mm. long), Ann. Soc. Ent. Fr. p. 189 (1889). *Hab.* Caraca.—M. Simon’s note, “*Abdomen fuscum, crebre testaceo punctatum, in medio maculis fulvis uniseriatis*,” proves that his species is not identical with either of the above three species.

*Diplura bicolor*, E. Sim. (♀, 15 mm. long), Ann. Soc. Ent. Fr. p. 215 (1889). *Hab.* Caraca, Brazil.—The diagnosis “*Cephalothorax fulvo-rufescens*” —“*abdomen oblongum, atrium*” —“*in parte secunda utrinque inordinate testaceo punctatum, subtus late et crebre testaceo variegatum*,” will not apply to either of the species under consideration.

*Diplura gymnognatha*, Bertk. (♀, 19 mm. long), Verz. der Brasilianischen Arachniden, 1830, p. 21.—“*Hinterleib mehr gelbbraun, Bauchseite heller*” —“*Grundfarbe des Cephalothorax rothbraun*.” Certainly not one of the three here described.

*Diplura longicauda*, Auss. (♀, carapace 10 mm. long), Verhandlungen der k. k. zool.-bot. etc. 1871, p. 179. *Hab.* Quito. Type in coll. Univers. Vienna.—Ausserer makes no mention of any blotches on the abdomen; and the spinners are far longer in proportion than those of *H. rufescens*.

*Diplura aequatorialis*, Auss. (♀), *op. cit.* 1871.—Very similar to but larger than *longicauda*. *Hab.* Cordilleras, Ecuador. Type in coll. Vienna University.—Central anterior eyes one-half larger than laterals (sec. Ausserer).

*Diplura rogenhoferi*, Auss. (♀, 19 mm. long), *op. cit.* 1871. *Hab.* Brazil.—“*Obere Spinnwarzen so lang als das Abdomen*.” “*Abdomen braun, mit 6 nach hinten gebogenen, dünnen, weisslichen Querstreifen, die sich gegen den Bauch verlieren*.” Central anterior eyes larger than laterals (sec. Ausserer).

*Diplura cousini*, E. Sim. (♀, 22–25 mm. long), Act. Soc. Bordeaux, 1889, p. 400. *Hab.* Quito.—*Labium* with spinules at apex. Central anterior eyes a little smaller than laterals (sec. Simon).

#### Genus ISCHNOTHELE, Ausserer, 1876.

Type. *Isechnothele caudata*, Auss., ♀. *Hab.* Yucatan, Mexico. Verhandl. der k. k. zool.-bot. Gesell. Wien, 1876, p. 163. Type specimen in coll. Brit. Mus. Nat. Hist.

In Ann. Mag. Nat. Hist. ser. 6, vol. xvi. p. 224, 1895, Mr. R. I. Pocock has already pointed out that the type specimen of *Ischnothele caudata*, Auss., is congeneric with examples of a Spider which have been identified by M. Simon as *Mygale guyanensis*, Walck., from the island of St. Vincent, West Indies, these being also in the British Museum of Natural History, South Kensington.

M. Simon has, however (Hist. Nat. Ar. 1892, i. p. 187), referred *M. guyanensis* to Karsch's genus *Thelechoris*, created in 1881 for a Spider found in Madagascar, as though congeneric with it and with *T. striatipes*, Sim., also from Madagascar. The latter, M. Simon, on the authority of Dr. Lenz of Lübeck, now regards as identical with Karsch's species *T. rutenbergi*, the type of *Thelechoris*.

Whether this form is really congeneric with *M. guyanensis*, and therefore with *T. caudata*, Auss., the type of Ausserer's genus *Ischnothele* created in 1875, I am not, of course, in a position to decide. But even if it were, the generic name *Ischnothele* has priority over *Thelechoris*, as Mr. Pocock has already remarked.

Whether, too, the form regarded as *M. guyanensis*, Walck., by M. Simon is really the form which Walckenaer had before him, I am, of course, unable to say; but from the fact that the former is abundant in Guyana, the isle of St. Vincent, and in North Brazil (see Simon), one would regard it as highly probable, though not absolutely certain on this account.

In any case, unless M. Simon has seen the types, such an identification must be regarded not as *Ischnothele guyanensis* (Walck.) but as *Ischnothele guyanensis* (Walck.)—(Sim.), the brackets signifying that the form was described or referred to by these authors under some generic name other than *Ischnothele*, while the "— (Sim.);" indicates that the form is not necessarily in reality Walckenaer's form but M. Simon's identification of it.

It may be convenient enough to regard the "first identification" by an author of a form of which the type no longer exists, and the description and figure do not furnish conclusive evidence as to its identity, as *correct*. Such an identification, however, even though universally adopted for the sake of convenience, is not, on this account alone, of necessity the right one.

*ISCHNOTHELE SIEMENSI*, n. sp. (Plate XXXV. figs. 7, 9, 15.)

♀. 18 mm. long. Type in coll. Brit. Mus. Nat. Hist. 1896.

*Hab.* Lower Amazons, everywhere, from Pará—Manãos.

♀.—*Colour.* Carapace testaceous brown, broadly margined with pale rufous-yellow hairs; mandibles black-brown. *Abdomen* black or deep brown, with a central dorsal longitudinal rufous silver-white band on the posterior three-quarters; broad in front, narrowed behind, with four and often five short oblique branches; spinners brown; ventral surface pale brown. *Sternum*, coxa, and trochanter of legs and pedipalp testaceous brown; the coxa of latter margined anteriorly with yellow. Femora and patella of legs dusky black; tibia, protarsus, and tarsus dull orange-brown.

Carapace compressed. Cephalic area slightly raised. Eye-

tumulus low; anterior row of eyes a little procurved (posterior margin of laterals aligned with centre of medians); the latter circular, half a diameter apart, the same distance from laterals, their diameter distinctly less than axis of laterals. Laterals ellipsoidal, distinctly separate, anterior a trifle larger than posterior. Central posteriors very small, equidistant from central anterior and posterior laterals<sup>1</sup>.

*Sternum* a trifle longer than broad; four pairs of sigilla visible—1st pair at base of labial plate; 2nd, 3rd, and 4th small, marginal.

*Labium* broader than long, not spinulose. Coxa of pedipalp  $\frac{1}{3}$  longer than broad; anterior distal angle slightly produced and bluffy rounded, not spinulose; basal anterior angle and central basal disk studded with minute cuspules. *Legs* 4, 1, 2, 3. Femora clothed beneath with long silky hairs; other segments similarly, though less thickly. Tibiæ, protarsi, and tarsi with a few spines beneath, especially iii. and iv.

*Spinners* four. Posteriors as long as abdomen, trisegmental; two basal segments subequal, normal; terminal 1 mm. longer than both basals taken together, flexuose, caudiform, attenuate at apex; separate at base a distance equal to length of both basals taken together. Anterior spinners 2 mm. long, separate at base  $\frac{1}{3}$  longer than one of them. Tarsal claws three, superiors armed with 10–11 long denticles, inferior with four or five. Outer margin of fang-groove with 10 stout teeth, inner margin with 9; a third row of minute cusps close to outer row on inner side at base.

*Measurements in millimetres* (largest specimen).—♀. Carap. 7 long., 5.5 lat. Abd. 11 long., 8.25 lat. Stern. 3 long., 2.5 lat. Coxa of pedipalp 2 long., 1.5 lat. Pedes 4, 1, 2, 3—iv. 13 long. Postr. man. 11 long. Artl. 3—2.75—5.25 long., 4 separate. Antr. mam. 2 long., 2.5 separate. Mandibles 3 long.

This species is, without any doubt, one of the most abundant spiders on the Lower Amazons. It abounds almost everywhere, forming its white, sheet-like web, constructed sometimes in tiers, one sheet above the other, under the bark of trees, amongst foliage, in the hollow centres and amongst the spikes of pine-apple plants, and in the crevices and crannies of ruined buildings. Occasionally, too, they are constructed, like those of our *Agelena*, on the ground. In general character the Spiders bear a strong resemblance to this genus as well as to *Textrix*, and the speed of their rapid retreat reminds one very much of the latter Spider. The web, too, is very similar to that of *Teegenaria* or *Textrix* in character. Though so abundant, they are not easily secured on account of their rapidity, and I was unfortunate in not securing a single male. It occurred everywhere from Pará to Manãos, along the river margin and in the forest on the "terra firma." Whether it extends far north or south I cannot say, though I should not be surprised to find it through the entire valley of the Amazons. The species forms an addition to the Museum collection.

<sup>1</sup> These characters must be used with great caution.

The following species belonging to this genus have been described from the West Indies, Central America, and Brazil:—

*I. caudata*, Auss., ♀. Type of genus *Ischnothele*; in coll. Brit. Mus. Nat. Hist. *Hab.* Yucatan, Mexico.—*Verhandlungen etc.* Wien, 1876, p. 153.

*I. guyanensis* (Walck.)—(Sim.), ♂ (sub *Mygale*). *Hab.* Guyana.—*Ins. Apt.* i. 1837, p. 231.

*I. zebrina* (E. Sim.), ♀ (sub *Thelechoris*), Actes Soc. L. Bordeaux, xliv. p. 321, 1891 & 1892. *Hab.* Nicaragua.

*I. digitata* (Cambr.), ♂ ♀ (sub *Macrothele*). *Hab.* Guatemala.—*Biol. Centr.-Amer.*, Aran. 1891, p. 92, pl. xii. fig. 3. Type in coll. O. P. C.

*I. pusilla* (E. Sim.), ♂ ♀ (sub *Entomothele*). *Hab.* Venezuela.—*Ann. Soc. Ent. Fr.* 1888, p. 246.

NOTE.—*Thelechoris rutenbergi*, Karsch, type of genus *Thelechoris*, Abhl. d. naturw. Ver. Bremen, vii. 1881, p. 196, is a native of Madagascar, and may or may not be congeneric with *I. caudata*, Auss., and *I. guyanensis*, Walck.

*Thelechoris striatipes* (Sim.) (sub *Entomothele*), *Ann. Soc. Ent. Fr.* 1888, p. 246, is also a native of Madagascar, and is set down as a synonym of *T. rutenbergi* by M. Simon, on the authority of Dr. Lenz, in *Hist. Nat. Ar.* i. 1892, p. 187.

#### Table of Specific Characters.

##### A. Carapace unicolorous testaceous brown.

1. Abdomen unicolorous; clothed with silky rufous-golden pubescence. (11 mm. long, ♀.)..... *I. caudata*, Auss.

2. Abdomen with central dorsal longitudinal series of transverse dull orange A-shaped bars, the first half separate, the second united on the median line. Sides towards apex speckled with dull orange spots.

a. Size larger, 18 mm. long, ♀ ..... *I. digitata* (Cambr.).

b. Size smaller, 10-11 mm. long. (Females.)

\* Abdomen black, spotted with dull testaceous, and on the second half ornamented with two rows of short, oblique, testaceous lines, three on each side.

Anterior row of eyes, seen from above, forming an almost straight line. Anterior centrals slightly smaller than laterals. Laterals on either side all but in contact with each other. The anterior lateral larger than the posterior lateral .....

*I. zebrina* (E. Sim.).

\*\* Abdomen dull purple-brown, speckled with dull testaceous spots on sides towards apex; with central dorsal longitudinal series of 6 transverse dull orange A-shaped bars, the first three separate, the second three united on the median line.

Anterior row of eyes slightly procurved (posterior margin of laterals aligned with centre of medians). Anterior centrals slightly smaller than laterals. Laterals distinctly separate; anteriorly slightly larger than posteriors .....

*I. guyanensis* (Walck.).

B. Carapace testaceous brown, margined with a broad band of dull orange silky pubescence.

1. Size larger, 18 mm. long (♀).—Central anterior eyes slightly smaller than laterals. Anterior row slightly procurved; (posterior margin of laterals aligned with centre of medianus). Laterals distinctly separate, subequal, anterior a little larger. Abdomen with central longitudinal, silver-white rufous lanceolate band, broad in front, narrowed behind, on apical three-quarters, with four, or sometimes five, short oblique branching lines ..... *I. siemensis*, n. sp.
2. Size smaller, 10 mm. (♀).—Central anterior eyes a little larger than laterals. Laterals scarcely separate; anterior larger than posterior. Abdomen with central longitudinal band of silver-white-rufous marks ("vitta"), not reaching anterior margin, broad in front, narrowed behind, with four short branches on either side ("quadripennata") ... *I. pusilla* (E. Sim.).

REMARKS.—The characters of *I. digitata*, *I. caudata*, and *I. siemensis* are taken from the type specimens. Those of *I. guyanensis* from females from St. Vincent, identified by M. Simon; e coll. Brit. Mus. Nat. Hist. Those of *I. zebra* and *I. pusilla* are taken from M. Simon's descriptions of the two species. As to the first four there can be no doubt about their distinctness as species; I am not so convinced, however, as to the distinction between *I. zebra* and *I. guyanensis*. M. Simon thinks that probably *I. zebra* and *I. digitata* are identical.

The chief distinction drawn by M. Simon between the first two is based on the difference between the anterior eyes: "*lineam subrectam formantibus*" in *zebra*; in *guyanensis* "*lineam leviter procurvam*." I must confess that I am unable myself to appreciate the distinction between "*a line almost straight*" and "*a line slightly curved*." The other character, however, given in *I. zebra*, "*oculis lateralibus subaequis et utrinque juxta contiguus*," as contrasted with "*oculis lateralibus distincte separatis et antico postico majore*" in *I. guyanensis*, may be a good one, provided it is drawn from a long series of adult examples. The oblique bars in *I. guyanensis* are six in number, the first 3 not united on the median line; of *I. zebra* M. Simon says, "*abdomen atrum in parte secunda lineis testaceis obliquis et abbreviatis biseriatis, utrinque tribus, ornatum*."

If *I. zebra* (11 mm. long) and *I. digitata* (18 mm. long) are identical, the characters of the former have possibly been taken from an immature female. *I. pusilla*, too, must be closely allied to *I. siemensis*, though the great difference in the size furnishes a strong presumption that they are distinct.

#### EXPLANATION OF THE PLATES.

##### PLATE XXXIII.

- Fig. 1. *Melodeus sanguineus*, n. sp., ♀ (p. 758). Dorsal aspect.  
2. " *niger*, n. sp., ♀ (p. 759). Dorsal aspect.

- Fig. 3. *Harmonicon rufescens*, n. sp., ♀ (p. 756). Abdomen in profile.  
 4. *Melodeus sanguineus*, n. sp., ♀ (p. 755). Abdomen in profile.  
 5. " *niger*, n. sp., ♀ (p. 759). Abdomen in profile.  
 6. *Harmonicon rufescens*, n. sp., ♀ (p. 756). Leg i. in profile.  
 7. *Melodeus sanguineus*, n. sp., ♀ (p. 755). Leg i. in profile.  
 8. *Santaremia pococki*, n. sp., ♀ (p. 746). Full figure; dorsal aspect.  
 9. " " " " " Sternum.  
 10. *Avicularia avicularia*, ♀ " (p. 741). " Sternum.  
 11. " " " " " Three terminal joints of leg iv.  
 12. " *variegata*, n. sp., ♀ " (p. 743). Three terminal joints of leg iv.  
 13. *Santaremia pococki*, n. sp., ♀ (p. 746). Profile.

## PLATE XXXIV.

- Fig. 1. *Paratropis papilligera*, n. sp., ♀ (p. 723). Spinners from beneath.  
 2. *Anisaspoides gigantea*, n. sp., ♀ (p. 726). Spinners from beneath.  
 3. *Anisaspis tuberculata*, Sim., ♀ (p. 728). Spinners from beneath.  
 4. " " " " Labium, in profile.  
 5. " " " " Labium and coxa of pedipalp.  
 6. *Paratropis papilligera*, n. sp., ♂ (p. 723). Dorsal aspect.  
 7. " " " " Profile aspect.  
 8. " " " " Eye-tubercle in profile.  
 9. *Acanthodon petiti*, Générin, ♀, type (p. 732). Eyes from above.  
 10. " " " " Base of mandible, beneath.  
 11. " " " " Labium and coxa of pedipalp.  
 12. " " " " Tarsal claws of first pair of legs.  
 13. " *santaremia*, n. sp., ♀ (p. 733). Sternum.  
 14. *Homaeoplacis austeni*, n. sp., ♂ (p. 735). Eyes from above.  
 15. " " " " Apex of tibia of first pair of legs.  
 16. " " " " (a) Tarsus i. (b) Tarsus iv.  
 17. *Acanthoscurria gemiculata*, O. Koch, ♀ (p. 737). Leg i. from in front.  
 18. " *brocklehurstii*, n. sp., ♀ (p. 739). Leg i. from in front.  
 19. *Avicularia avicularia*, Linn., ♀ (p. 741). Eyes from above.  
 20. *Santaremia pococki*, n. sp., ♀ (p. 746). Eyes from above.  
 21. *Tapinauchenius sancti-vincenti*, Walck. (p. 744). Eyes from above.  
 22. *Anisaspoides gigantea*, n. sp., ♀ (p. 726). Protarsus and tarsus i. : profile.  
 23. *Paratropis papilligera*, n. sp., ♀ (p. 723). Tarsal claws of leg i.

## PLATE XXXV.

- Fig. 1. *Melodeus sanguineus*, n. sp., ♀ (p. 755). Lyra from above.  
 2. *Harmonicon rufescens*, n. sp., ♀ (p. 756). Base of mandible with pecten.  
 3. " " " " Lyra from above.  
 4. *Fufius auricomis*, Sim., ♂ (p. 750). Tibia and base of protarsus i.  
 5. *Neodiplura jelskii*, n. sp., ♂ (p. 755). Apex of tibia and base of protarsus i.  
 6. *Fufius auricomis*, Sim., ♂ (p. 750). Eyes from above.  
 7. *Ischnothelae sicimensi*, n. sp., ♀ (p. 762). Spinners from beneath.  
 8. *Fufius auricomis*, n. sp., ♀ (p. 750). Spinners from beneath.  
 9. *Ischnothelae sicimensi*, n. sp., ♀ (p. 762). Dorsal aspect.  
 10. *Neodiplura jelskii*, n. sp., ♂ (p. 755). First leg, profile.  
 11. " " " " Tarsus and bulb of pedipalp of male.  
 12. *Santaremia pococki*, n. sp., ♀ (p. 746). Tarsal claws of leg i.  
 13. *Avicularia avicularia*, Linn., ♀ (p. 741). Tarsal claws of leg i.  
 14. (a) *Neodiplura jelskii*, n. sp., ♀ (p. 755), sternum. (b) *Melodeus sanguineus*, n. sp., ♀ : sternum.  
 15. *Ischnothelae sicimensi*, n. sp., ♀ (p. 762). Base of mandible from beneath.  
 16. *Fufius auricomis*, Sim., ♂ (p. 750). Claws of tarsus i.  
 17. *Paratropis papilligera*, n. sp., ♂ (p. 723). Sternum.  
 18. *Actinopus wallacci*, n. sp., ♀ (p. 728). Base of mandible from beneath.